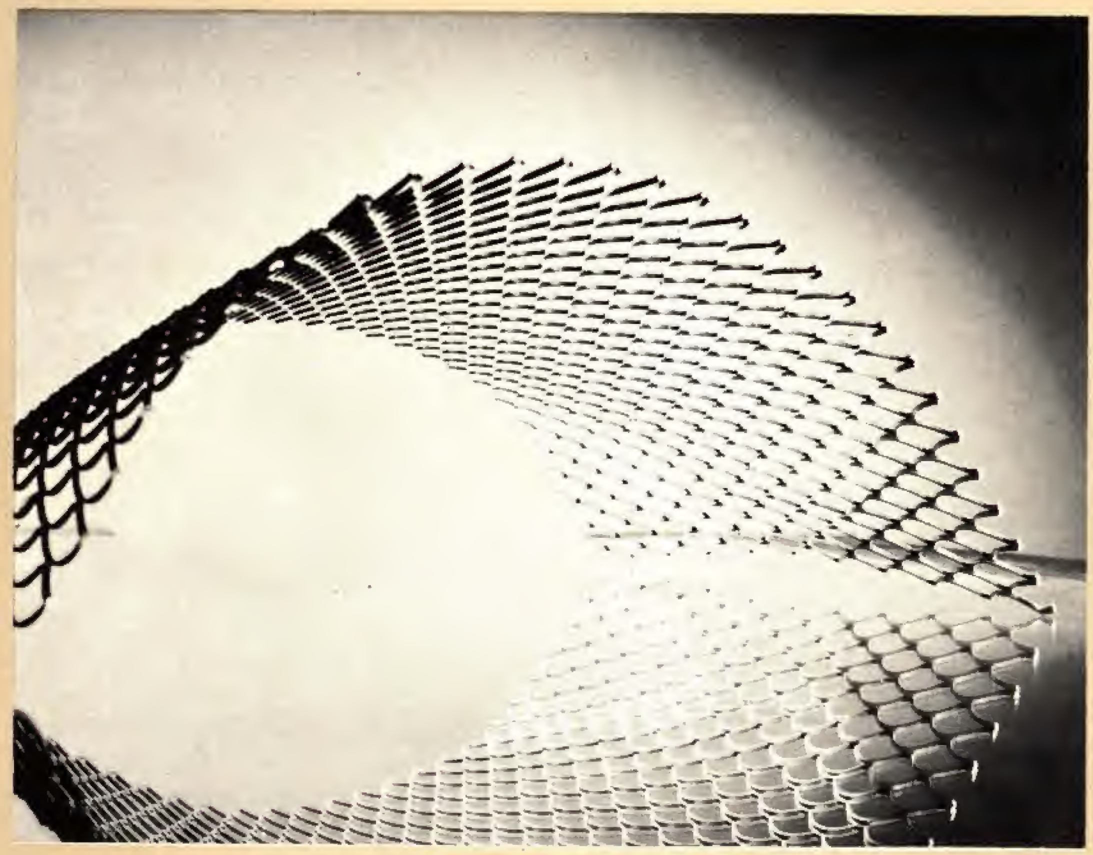
A.I.A. FILE 15-T (NN)
30-J

TECHNICAL INFORMATION

USG® DECORATIVE EXPANDED METAL

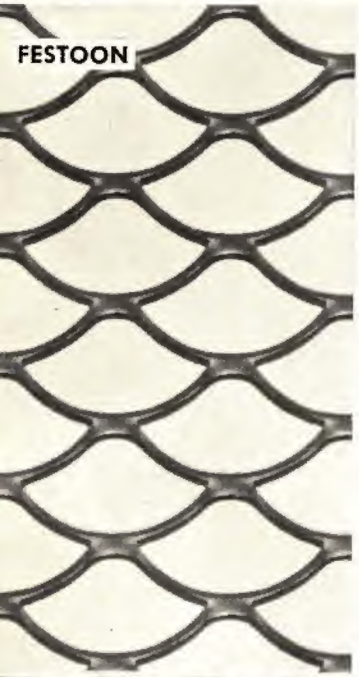


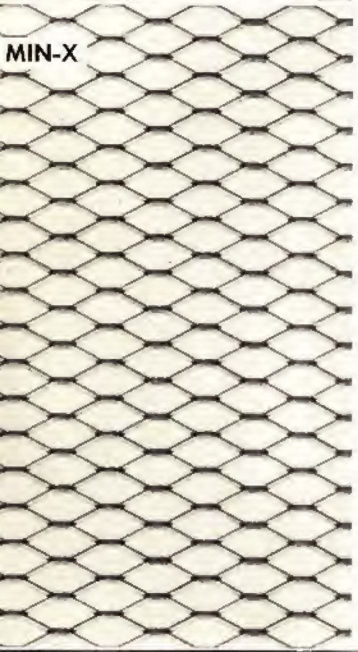
UNITED STATES GYPSUM

1959

A.I.A. FILE 15-T (NN)
30-J

DECORATIVE
EXPANDED METAL


FESTOON


MIN-X

DESCRIPTION

The six decorative patterns of USG Expanded Metal, **ARMORWEAVE, FESTOON, CATHEDRAL, WAVELENGTH, RONDO** and **MIN-X,** offer the Architect countless new design possibilities. They are attractive, functional and economical materials. All, except MIN-X, are produced in both aluminum and carbon steel.

In manufacture, sheets of metal are slit and cold-drawn into continuous mesh patterns. The strands and bonds of the resulting meshes come to rest at a sharp angle to the original sheet. This makes the expanded mesh more rigid than a solid sheet and gives it a three-dimensional effect which adds texture. USG Expanded Metal in this form is called "Type R". For applications where a smooth surface is desired, a flattened form of each pattern except **ARMORWEAVE** is produced by cold-rolling the mesh after expansion. Flattened meshes are designated as "Type F".

NOTE TO THE ARCHITECT: You may wish to rotate the expanded metal 90° or 180° from the positions shown in the adjacent photographs. This will achieve varying effects particularly with styles such as FESTOON, WAVELENGTH *and* CATHEDRAL *and positioning of the mesh should be indicated on your drawings.*

ARMORWEAVE, a sturdy, massive, handsome mesh pattern, is produced in ½" and 1½" styles to adapt to varying proportion requirements. Its wide-offset strands and bonds give ARMORWEAVE several unique and valuable properties. Because of them, ARMORWEAVE has excellent shading and concealing power, pleasing depth and texture, and added strength and rigidity. Yet this mesh retains a high percentage of open area for passage of air and usable light.

ARMORWEAVE has many potential architectural applications. Its properties make it a practical, and economical, material to specify for exterior facias and sunshades. ARMORWEAVE placed vertically gives 100% shading at a 45° profile angle. In many cases, initial savings on air-conditioning equipment will more than pay for the entire ARMORWEAVE sunshading installation.

FESTOON, a light, airy mesh pattern with a maximum percentage of open area is also produced in both ½" and 1½" styles. Combined with its attractive appearance, these characteristics make it an excellent material to specify for space dividers, decorative grilles, railing guards, etc.

CATHEDRAL, with its long, thin modern lines, may be placed as shown or rotated 90° to provide a horizontal or vertical accent.

MIN-X, a miniature mesh, is produced in five strand widths to give it a wide range of concealing power. This light-weight mesh is perfect for many grille and ornamental trim applications.

WAVELENGTH & RONDO. The unique and distinctive appearance of these two meshes warrants their consideration for many uses; particularly adaptable as accent points and decorative grilles and railing guards.

FUNCTION & UTILITY

Practical, as Well as Beautiful—USG Expanded Metals are lighter, yet more rigid than a solid sheet. They will not ravel when cut, are readily fabricated with standard equipment and techniques, may be framed with standard sections and attached by welding, bolting or riveting. A series of typical framing and attachment details, USG Bulletin IS-116, is available from USG Sales Offices.

Finishes Beautifully—The potential of USG Expanded Metal for architectural use is enhanced by the variety of finishes which may be applied to provide appropriate color and also added corrosion resistance. See table of common finishing techniques on page 3.

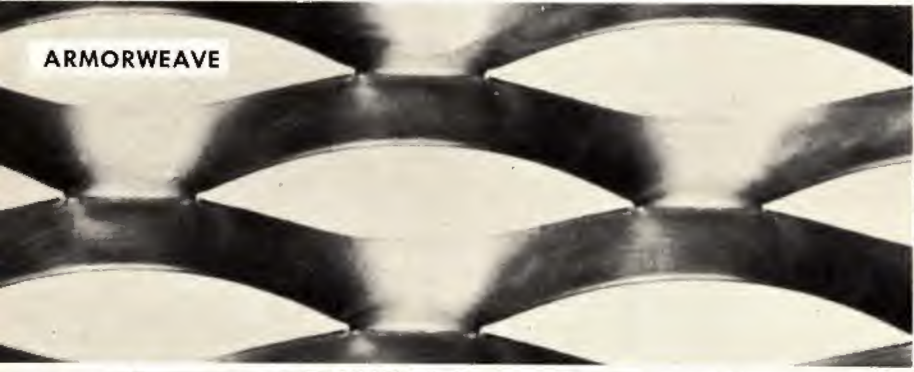
Provides Opportunity for Design Creativity—The USG Decorative Expanded Metals provide a design motif about which the Architect can exercise his personal creativity.

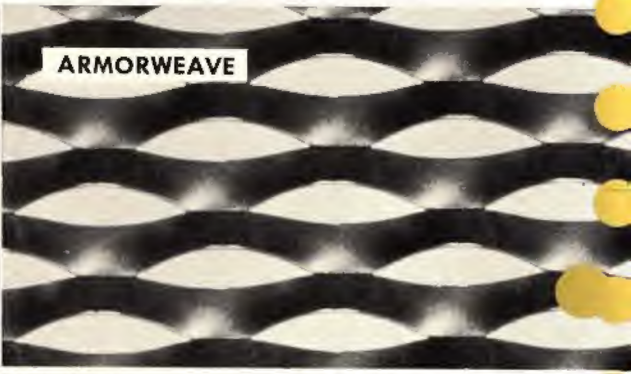
Appropriate Visibility Through the Mesh—A wide range of translucency is afforded by the various mesh designs, yet all retain a high percentage of open area for passage of light and air.

RECOMMENDATIONS & LIMITATIONS

If an aluminum mesh is attached to a steel frame, a gasket of rubber or other non-conductor should be used to prevent galvanic corrosion.

The mesh should be rigidly attached to the framing at approximately 6" centers.


ARMORWEAVE


ARMORWEAVE

ARMORWEAVE, FESTOON, CATHEDRAL, WAVELENGTH, RONDO, and MIN-X are trademarks owned by the United States Gypsum Company, and all identify the particular expanded metal manufactured only by United States Gypsum Company.

TYPICAL EXTERIOR & INTERIOR USES

- Ceilings
- Partitions
- Accent Points
- Railing Guards
- Decorative Trim
- Patio Coverings
- Building Facades
- Decoratve Screens
- Ornamental Grilles

MAXIMUM SHEET SIZES (1)

STYLE TYPE "R"	CARBON STEEL		ALUMINUM (2)	
	SWO	LWO	SWO	LWO
½" & 1½" ARMORWEAVE	72"	98.4"	72"	98.4"
½" FESTOON	78"	98.4"	168"	98.4"
1½" FESTOON	78"	99"	144"	99"
½" CATHEDRAL	78"	96"	96"	96"
½" WAVELENGTH	78"	98.4"	132"	98.4"
½" RONDO	78"	98.4"	111"	98.4"

STYLE TYPE "F"	CARBON STEEL & ALUMINUM	
	SWO	LWO
½" FESTOON	162"	48"
1½" FESTOON	(3) 162"	48"
½" CATHEDRAL	108"	48"
½" WAVELENGTH	150"	48"
½" RONDO	124"	48"

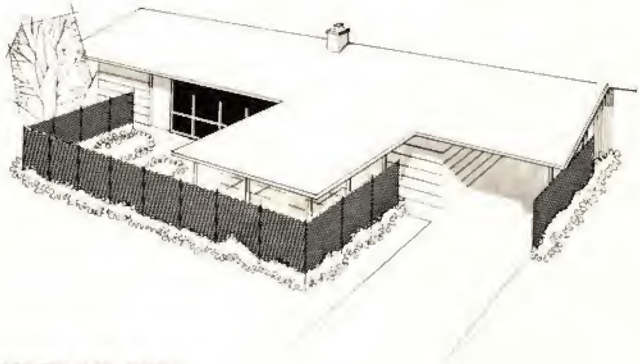
(1) Standard sheet sizes are shown on page 4. Maximum sheet sizes which can be produced on special order are shown above.

(2) Some carbon steel patterns may be produced in this size if not deburred. Consult USG Representative for details and recommendations.

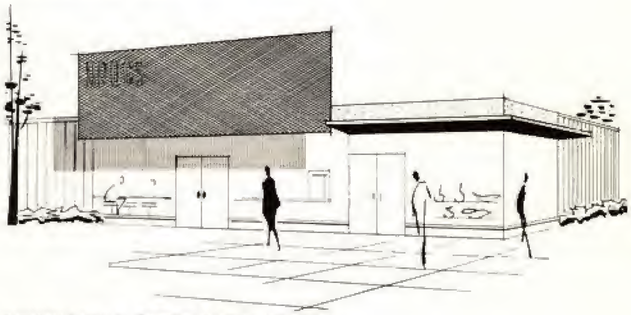
(3) 1½" #9 and 1½" .125 FESTOON—Type "F" only, can be produced 172" SWO.

USG DESIGN SERVICE

Other metals and alloys can be expanded to meet special requirements; also special designs are available. Contact Department #138, Chicago. The services of nearby USG Sales Engineers, Architect Service Representatives and distributors are available to furnish additional information.



SCREEN FOR PATIO



SUNSHADE & DECORATIVE FRONT

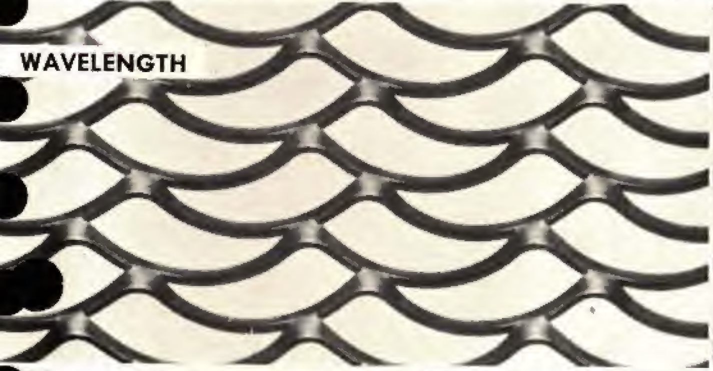
FINISHES aluminum

ALLOY	TYPE	EXTERIOR	INTERIOR	REMARKS
3003H-14	Unfinished	X	X	
3003H-14	Painted	X	X	Specify surface cleaning prior to painting.
3003H-14	Interior Anodized		X	Resists mild abrasion. Colors generally available natural, red, blue, green, yellow, gold, silver, copper, brass and black.
3003H-14	Exterior Anodized	X	X	Higher abrasion resistance.
3003H-14	Heavy Duty Anodized	X	X	Highest abrasion resistance and resistance to attack by combinations of sea air, humidity and industrially contaminated atmospheres.
3003H-14	Porcelain Enameled	X	X	
6061-0	Porcelain Enameled	X	X	Better structural properties after firing. This alloy expanded on special order only.

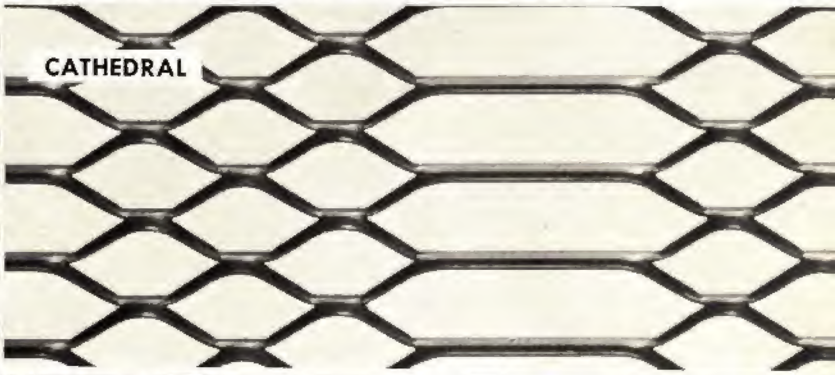
carbon steel

	Painted	X	X	Steel used has scale-free surface, but is shipped lightly oiled. Specify cleaning prior to finishing
	Bonderized & Enameled	X	X	
	Galvanized	X	X	
	Plastic Coated	X	X	
	Porcelain Enameled	X	X	Produced from low carbon open hearth steel adaptable to this finish.

The finishes are generally arranged in ascending order of added initial cost. United States Gypsum does not apply these finishes at our expanded metal plant.



WAVELENGTH

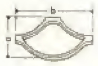
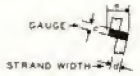
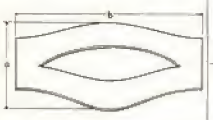
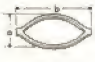
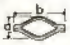
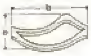
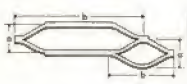


CATHEDRAL

DECORATIVE EXPANDED METAL | SPECIFICATION

TECHNICAL DATA

(ALL DIMENSIONS AND WEIGHTS ARE APPROXIMATE.) "a" = SWO (Short Way of the Opening.) "b" = LWO (Long Way of the Opening.)

PATTERN	MATERIAL	REG. FLAT.	STYLE DESIGNATION (MSG)	DESIGN SIZE a x b (inches)	OPENING SIZE (inches)	STRAND SIZE c x d (inches)	OVERALL Thickness e (inches)	STANDARD SHEET SIZE		PER CENT OPEN AREA	Wt.—lbs. Per 100 Sq. Ft.
								WIDTH (SWO)	LENGTH (LWO)		
FESTOON 	Carbon Steel	R	½" #20	.625 x 1.20	.507 x .938	.036 x .090	.175	4′	8′	71	43
			½" #18	.625 x 1.20	.500 x .938	.048 x .090	.175	4′	8′	71	58
			½" #16	.625 x 1.20	.500 x .938	.060 x .090	.175	4′	8′	71	72
			1½" #16	1.50 x 3.00	1.375 x 2.625	.060 x .112	.217	4′	8′	85	37
			1½" #13	1.50 x 3.00	1.313 x 2.625	.089 x .112	.236	4′	8′	81	56
			1½" #9	1.50 x 3.00	1.25 x 2.50	.135 x .141	.292	4′	8′	81	110
		F	½" #20	.688 x 1.20	.550 x 1.00	.030 x .100	.030	8′	4′	64	39
			½" #18	.688 x 1.20	.540 x 1.00	.040 x .100	.040	8′	4′	64	52
			½" #16	.688 x 1.20	.540 x 1.00	.051 x .100	.051	8′	4′	64	65
			1½" #16	1.688 x 3.00	1.438 x 2.625	.052 x .125	.052	8′	4′	79	34
			1½" #13	1.688 x 3.00	1.438 x 2.625	.071 x .140	.071	8′	4′	81	51
			1½" #9	1.75 x 3.00	1.25 x 2.50	.110 x .240	.110	8′	4′	75	101
	Aluminum	R	½" .051	.625 x 1.20	.507 x .938	.051 x .090	.175	4′	8′	71	21
			½" .081	.625 x 1.20	.467 x .938	.081 x .090	.175	4′	8′	71	33
			1½" .081	1.375 x 3.00	1.25 x 2.625	.081 x .112	.250	4′	8′	83	19
			1½" .125	1.50 x 3.00	1.25 x 2.563	.125 x .141	.250	4′	8′	81	34
Typical Type-R Bond Cross Section		F	½" .051	.688 x 1.20	.550 x 1.00	.043 x .100	.043	8′	4′	64	19
			½" .081	.688 x 1.20	.580 x 1.00	.069 x .100	.069	8′	4′	64	30
			1½" .081	1.75 x 3.00	1.375 x 2.625	.065 x .160	.065	8′	4′	74	17
			1½" .125	1.75 x 3.00	1.375 x 2.563	.100 x .190	.100	8′	4′	70	31
ARMORWEAVE 	Carbon Steel	R	½" #20	.6 x 1.20	.410 x .938	.036 x .200	.219	4′	8′	34	100
			½" #18	.6 x 1.20	.375 x .938	.048 x .200	.219	4′	8′	34	133
			½" #16	.6 x 1.20	.375 x .938	.060 x .200	.219	4′	8′	34	166
			1½" #20	1.31 x 3.00	.69 x 2.375	.036 x .500	.500	4′	8′	25	113
			1½" #18	1.38 x 3.00	.75 x 2.375	.048 x .500	.563	4′	8′	27	146
			1½" #16	1.38 x 3.00	.75 x 2.313	.060 x .500	.625	4′	8′	27	183
	Aluminum	R	½" .051	.6 x 1.20	.375 x .938	.051 x .200	.219	4′	8′	34	48
			½" .081	.6 x 1.20	.350 x .938	.081 x .200	.219	4′	8′	34	77
			1½" .051	1.270 x 3.00	.563 x 2.125	.051 x .500	.500	4′	8′	21	59
			1½" .081	1.297 x 3.00	.563 x 2.125	.081 x .500	.625	4′	8′	23	89
RONDO 	Carbon Steel	R	½" #20	.520 x 1.195	.469 x .938	.036 x .089	.163	4′	8′	65	52
			½" #18	.520 x 1.195	.438 x .938	.048 x .089	.163	4′	8′	65	71
			½" #16	.520 x 1.195	.438 x .938	.060 x .089	.163	4′	8′	65	8
		F	½" #20	.625 x 1.195	.500 x .938	.030 x .100	.030	8′	4′	59	47
			½" #18	.625 x 1.195	.438 x .938	.040 x .100	.040	8′	4′	59	64
			½" #16	.625 x 1.195	.469 x .938	.051 x .100	.051	8′	4′	59	78
	Aluminum	R	½" .051	.520 x 1.195	.438 x .938	.051 x .089	.163	4′	8′	65	25
			½" .081	.520 x 1.195	.408 x .938	.081 x .089	.163	4′	8′	65	40
		F	½" .051	.625 x 1.195	.500 x .938	.043 x .100	.043	8′	4′	59	23
			½" .081	.625 x 1.195	.475 x .938	.069 x .100	.069	8′	4′	59	36
MIN-X 	Carbon Steel	R	3⁄16" #24,.034 Strand	.188 x .500	.156 x .344	.024 x .034	.065	*	*	71	36
			3⁄16" #22,.034 Strand	.188 x .500	.156 x .344	.030 x .034	.070	3′	8′	71	45
		F	3⁄16" #24,.034 Strand	.188 x .525	.125 x .390	.022 x .038	.022	*	*	65	35
			3⁄16" #22,.034 Strand	.188 x .525	.130 x .390	.028 x .038	.028	3′	8′	65	43
WAVELENGTH 	Carbon Steel	R	½" #20	.555 x 1.20	.468 x .938	.036 x .103	.171	4′	8′	63	55
			½" #18	.555 x 1.20	.438 x .938	.048 x .103	.171	4′	8′	63	74
			½" #16	.555 x 1.20	.438 x .938	.060 x .103	.171	4′	8′	63	92
			3⁄16" #24	.200 x .500	.094 x .344	.050 x .024	.080	*	*	50	50
			3⁄16" #22	.200 x .500	.094 x .344	.050 x .030	.088	*	*	50	62
		F	½" #20	.625 x 1.20	.500 x .938	.030 x .112	.112	8′	4′	57	50
			½" #18	.625 x 1.20	.375 x .938	.040 x .112	.112	8′	4′	57	67
			½" #16	.625 x 1.20	.375 x .938	.051 x .112	.112	8′	4′	57	83
			3⁄16" #24	.200 x .525	.090 x .375	.056 x .022	.022	*	*	47	45
			3⁄16" #22	.200 x .525	.090 x .375	.056 x .026	.026	*	*	47	56
	Aluminum	R	½" .051	.555 x 1.20	.438 x .938	.051 x .103	.171	4′	8′	63	27
			½" .081	.555 x 1.20	.410 x .938	.081 x .103	.171	4′	8′	63	43
		F	½" .051	.625 x 1.20	.500 x .938	.043 x .112	.112	8′	4′	57	25
			½" .081	.625 x 1.20	.475 x .938	.068 x .112	.112	8′	4′	57	39
CATHEDRAL				SHORT LONG	SHORT LONG						
	Carbon Steel	R	½" #20	.458x1.0 .458x2.0	.344x.75 .344x1.75	.036 x .089	.175	4′	8′	61	58
			½" #18	.458x1.0 .458x2.0	.344x.75 .344x1.75	.048 x .089	.175	4′	8′	61	77
			½" #16	.458x1.0 .458x2.0	.344x.75 .344x1.75	.060 x .089	.175	4′	8′	61	97
		F	½" #20	.534x1.0 .534x2.0	.344x.75 .344x1.75	.033 x .092	.033	8′	4′	58	53
			½" #18	.540x1.0 .540x2.0	.344x.75 .344x1.75	.044 x .092	.044	8′	4′	58	70
			½" #16	.562x1.0 .562x2.0	.344x.75 .344x1.75	.052 x .092	.052	8′	4′	58	89
	Aluminum	R	½" .051	.458x1.0 .458x2.0	.344x.75 .344x1.75	.051 x .089	.175	4′	8′	61	28
			½" .081	.458x1.0 .458x2.0	.344x.75 .344x1.75	.081 x .089	.175	4′	8′	61	45
		F	½" .051	.562x1.0 .562x2.0	.344x.75 .344x1.75	.046 x .095	.046	8′	4′	58	26
			½" .081	.562x1.0 .562x2.0	.313x.75 .313x1.75	.068 x .100	.068	8′	4′	58	41

*Produced on special order. MIN-X is produced in .050", .060", .070" and .080" strand widths on special order.

SPECIFICATION:

SCOPE: The Contractor shall supply all labor, material and equipment to install the specified pattern of USG Expanded Metal in all areas where shown on the drawings.

MATERIALS: Expanded Metal pattern used shall be (specify by complete style designation). (Example: 1½" .081 USG Aluminum ARMORWEAVE Expanded Metal—Type "R".) The Contractor should be advised if finish on the Expanded Metal is required, i.e., anodized, etc.

A.I.A. File 14-A-l

TECHNICAL INFORMATION

USG® GRATE-X*

EXPANDED METAL GRATING

UNITED STATES GYPSUM

1959

*T.M. Reg. U.S. Pat. Off.

A.I.A File 14-A-l

GRATE-X*

EXPANDED METAL GRATING

Description

USG GRATE-X is a heavy duty type expanded metal, made of steel plate which is slit and expanded in a cold-drawing operation. Designed especially for use as a lightweight open steel flooring. GRATE-X is ideal for flooring, cat walks, platforms, stair treads, etc., where its principal use is for light storage and foot traffic. Many other practical uses are possible.

U.S.G. Grate-X is also made from $\frac{1}{4}''$ aluminum plate for uses where the inherent properties of aluminum are required in addition to the advantages of Grate-X.

Function and Utility

Economical: Its low cost and light weight, combined with high strength, make for a most economical construction. A wide selection of sizes and weights is available.

High Strength: Formed like a truss, every interconnected strand acts as a structural member distributing the load in many directions, over a considerable area. There are no riveted or welded joints.

Easily Installed: The uniform pattern; ease of cutting with torch, bolt cutters or hacksaw; ease of anchorage with spot welding or bolting and ease of shaping to curved surfaces make for quick, easy installation. Holes may be cut or patched, and alterations made at will. Ease of fabrication permits stocking at user's plant for use as needed for alterations, additions, etc.

Extra Safety: The angular ridged surface formed by the multiple junctions of strands provides excellent anti-slip qualities. The closely-spaced long bond feature of GRATE-X provides greater contact area, resulting in a high traction surface, highly skid-proof yet smooth enough for wheel traffic. Snow and ice break off easily under foot, water and oil drain off readily; thus maintaining anti-slip qualities under adverse conditions.

Large Open Area: The angular position of the strands and bonds permits ready passage of light and air. Dust cannot accumulate. The percentage of open area is actually as great at an entrance angle of 45 degrees as at 90 degrees.

Easily Maintained: The angular position of strands and bonds and large open area make GRATE-X virtually self-cleaning. All surfaces can be readily reached for painting with brush or spray gun.

For further details, consult the nearest USG sales office.

GRATE-X allows ready passage of air and light

Specifications

SCOPE: GRATE-X (U S G Expanded Metal Grating), shall be installed for all walkways and other areas where shown on drawings.

Material: GRATE-X shall weigh (specify weight per square foot from Table 2).

(For steel) The steel used in its manufacture shall comply with ASTM designation A-283-46T.

(For aluminum) The aluminum in its manufacture shall be 5052 SH 32 alloy of aluminum.

ERECTION: Units of GRATE-X shall be installed with straight edge of bond up. GRATE-X shall be so placed that the direction of the long way of the diamond parallels the direction of the span. Attachment to framing shall be by welding at 6″ intervals. Edges parallel to long way of diamonds shall be butted and welded on every second bond. Individual pieces of GRATE-X shall be placed in such a manner that the diamonds of one piece are aligned with those of adjacent pieces.

"GRATE-X" and "EXPAND-X" are registered trademarks owned by United States Gypsum and identify the particular types of expanded metal manufactured only by United States Gypsum

USG GRATE-X* STAIR TREADS

GRATE-X stair treads have all the advantages of GRATE-X and are ideal for fire escapes and all types of industrial and ship stairways. The treads are completely prefabricated by U.S.G. and shipped to the customer ready for installation. The stair treads are easily installed by a simple attachment with bolts and nuts to standard steel channel stringers. Bolts and nuts for attachment are not furnished with the treads.

Tread lengths are available from 16 in. to 48 in. inclusive, in ½ in. increments. Standard widths are listed in table on page 3.

*T.M. Reg. U. S. Pat. Off.

TECHNICAL DATA Load Test Data with Deflections in Inches

Table 1

LOADING CONDITION—Concentrated load in lbs. per 12″ of width applied at center of span. Deflections given in inches at center of span are based on tests. Ends of grating rigidly fastened about 6″ on centers.

Carbon Steel (3, 4, 5 and 7 lb.) Grate-X. Data from tests by Armour Research Foundation

LOAD	DEFLECTION IN INCHES . . . CARBON STEEL GRATE-X															
CONCENTRATED LOAD AT CENTER LINE—POUNDS Per 12″ WIDTHS (1)	25″ CLEAR SPAN				30″ CLEAR SPAN				35″ CLEAR SPAN				40″ CLEAR SPAN			
	TYPE OF GRATING				TYPE OF GRATING				TYPE OF GRATING				TYPE OF GRATING			
	3.0 Lb.	4.0 Lb.	5.0 Lb.	7.0 Lb.	3.0 Lb.	4.0 Lb.	5.0 Lb.	7.0 Lb.	3.0 Lb.	4.0 Lb.	5.0 Lb.	7.0 Lb.	3.0 Lb.	4.0 Lb.	5.0 Lb.	7.0 Lb.
50	.060	.040	.037	.011	.086	.061	.048	.031	.147	.088	.068	.051		.119	.089	.062
100	.114	.082	.070	.035	.169	.120	.093	.062		.174	.138	.089		.241	.177	.111
150		.119	.102	.062		.177	.140	.093			.204	.123			.260	.159
200			.134	.079			.181	.117				.155				.205

Carbon Steel (4.27 lb.) and Aluminum (2.0 lb.) Grate-X. Data from USG Research

LOAD	DEFLECTION IN INCHES					
CONCENTRATED LOAD AT CENTER LINE—POUNDS PER 12″ WIDTHS (2)	CARBON STEEL (4.27 lb.) GRATE-X				ALUMINUM (2.0 lb.) GRATE-X	
	CLEAR SPAN				CLEAR SPAN	
	23″	29″	35″	41″	20″	25″
50	.024	.043	.083	.123	.076	.118
100	.050	.095	.156	.232	.153	.237
150	.080	.153	.223		.229	.355
200	.111	.209			.306	

Weights (per square foot) and Dimensions (inches)

Table 2

CARBON STEEL

STYLE (psf)	DIAMOND SIZE WIDTH X LENGTH	OPENING SIZE	STRAND WIDTH	STRAND THICK-NESS	GRATE-X DEPTH	PERCENT OPEN AREA	SHEET SIZE WIDTH (SWD) LENGTH (LWD)
3.0 lb.	1.44 x 5.0	1.09 x 3.31	.23	.223	½	61%	48″δ or 72″x60″, 96″γ or 120″
4.0 lb.	1.395 x 5.0	1.02 x 3.25	.30	.223	⅝	54%	48″, 60″ or 72″ x 60″ x 96″γ or 120″ 60″ x 60″ or 120″
4.27 lb.	1.412 x 4.0	1.0 x 2.88	.30	.243	⅝	58%	48″ x 72″ or 96″
5.0 lb.	1.143 x 5.0	.72 x 2.88	.31	.223	⅝	48%	48″ x 60″, 96″γ or 120″
6.25 lb.	1.412 x 5.0	.781 x 3.125	.380	.284	47/64	46%	48″ or 72″ x 96″γ
7.0 lb.	1.333 x 5.0	.70 x 2.75	.40	.284	¾	40%	48″ x 50″ x 100″

δ—This width produced on special order
γ—Length shown is nominal, actual length—97½″

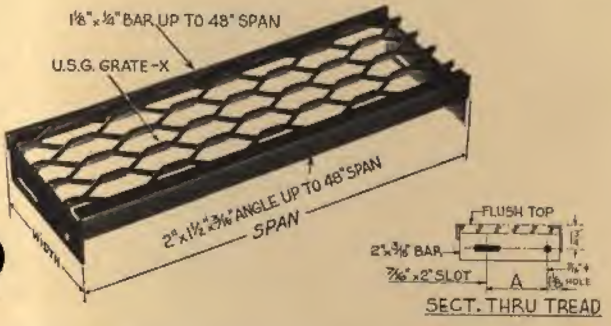
ALUMINUM

2.0 lb.	1.25 x 5.0	.73 x 2.88	.356	.250	⅝	43%	60″ x 60″ or 120″

Note: Special sizes on request. Specify sizes by giving diamonds SWD (Shortway of diamond) by LWD (Long way of diamond) respectively.

#2 PROJECTION MESH

1.87 lb.	1.125 x 5.000	.88 x 3.19	.187	.134	11/16	67%	6′ x 10′



Widths Available

NO. 4A TREAD (4 LB. GRATE-X)	NO. 5A TREAD (5 LB. GRATE-X)	DIMENSION "A" FOR BOTH 4A & 5A
5¾″	6¼″	2½″
7⅛″	7⅜″	2½″
8½″	8½″	4½″
9⅞″	9¾″	6″
11¼″	10⅞″	7″

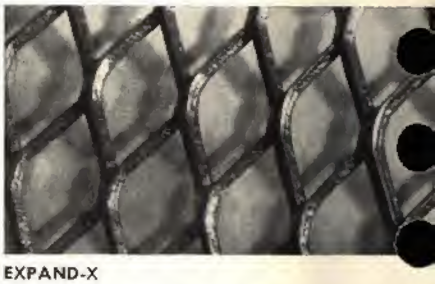
Lengths Available. Tread lengths from 16 inches to 48 inches inclusive, in ½ inch increments.

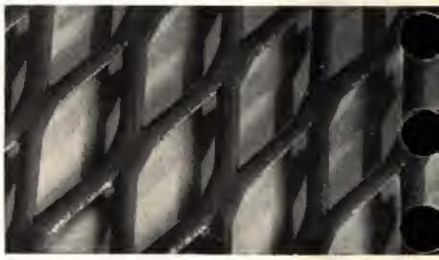
EXPAND-X*

EXPANDED METALS

Description

EXPAND-X and Flattened EXPAND-X are open mesh Expanded Metal units made from sheets of steel or certain other metals which have been slit and expanded in a single cold-drawn operation. See data below for sizes. In addition to our Standard EXPAND-X series, inquiries are invited on our Decorative Expanded Metal series.


EXPAND-X


Flattened EXPAND-X

Function and Utility

Many uses. Particularly suitable for partitions, ventilator grills, window guards, shelving, radiator enclosures, bins, racks, etc.

Open mesh. The large percentage of open area permits passage of air and light.

Strong and rigid. There are no rivets or welded joints except where units are joined. Strands of expanded metal are set at a sharp angle, improving strength and rigidity. Various weights are available to meet varying conditions.

Smooth surface. The surface of Flattened EXPAND-X expanded metal permits its use for shelving on which objects can more easily stand without tipping and slide without catching.

Workable. These products can be readily cut into desired shapes without danger of raveled strands, and may be welded, bent and formed, drawn and flared.

Neat appearance. Pattern is well formed and regularly spaced.

Accessories. Edgings, framings and various other accessories are available.

Metals. Open hearth steel, stainless steel and aluminum are stocked. Copper, brass, etc., can be furnished made to order.

*T. M. Reg. U.S. Pat. Off.

Guide to the Selection of USG Expanded Metals

(All dimensions are approximate)

SUGGESTED APPLICATIONS								Style Number	Weight per sq. ft. (lbs.)	SIZE OF DIAMOND INCHES Cen. to Cen. of Bonds		EXPAND-X			Flattened EXPAND-X			Made from U. S gaug No.
EXPAND-X					Flattened EXPAND-X							Ap-prox. % open area	Sheet sizes		Ap-prox. % open area	Sheet sizes		
Machine guards	Window guards	Partitions	Gratings	Shop baskets	Tool cribs	Filters and air conditioning	Trays racks and shelving			Width	Length		Width short way of diamond	Length long way of diamond		Width short way of diamond	Length long way of diamond	
							•	¼" #18	1.17	.26	1.03	40	4′	8′	37	4′	8′	18
						•	•	½" #40	.40	.497	1.195	83	4′	8′	77	4′	8′	18
•							•	½" #18	.70	.507	1.195	65	4′ & 6′	8′	60	3′ & 4′	8′	18
•				•			•	½" #16	.87	.507	1.195	65	4′ & 6′	8′	63	3′ & 4′	8′	16
				•		•	•	¾" #16	.54	.880	2.00	76	4′ & 6′6″	8′	76	3′ & 4′	8′	16
•	•						•	¾" #13	.80	.880	2.00	76	4′ & 6′	8′	75	3′ & 4′	8′	13
	•	•	•	•			•	¾" # 9	1.80	.857	2.00	68	4′ & 6′	8′	65	3′ & 4′	8′	10
						•	•	1½" #16	.40	1.35	3.125	85	4′	8′	86	3′ & 4′	8′	16
		•					•	1½" #13	.60	1.35	3.125	85	4′ & 6′	8′	81	3′ & 4′	8′	13
	•	•						1½" # 9	1.19	1.33	3.125	76	4′ & 6′	8′	76	3′ & 4′	8′	10

Other types and styles also available.

Design service. United States Gypsum Industrial Sales Department is equipped to assist in working out specific problems and to recommend attachment devices and methods.

AGX-6

UNITED STATES GYPSUM
The Greatest Name in Building
GENERAL OFFICES 300 WEST ADAMS STREET, CHICAGO 6, ILLINOIS

U. S. G. SALES OFFICES LOCATED AT THESE CITIES

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BALTIMORE, MD.
BIRMINGHAM, ALA.
BUFFALO, N.Y.
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CHICAGO, ILL.
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CLEVELAND HEIGHTS, OHIO (CLEVELAND)
CLIFTON, N.J. (NEWARK)
DALLAS, TEXAS
DENVER, COLO.
DETROIT, MICH.
DE WITT, N.Y. (SYRACUSE)
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INDIANAPOLIS, IND.
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PHOENIX, ARIZ.
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PORTLAND, ORE.
RALEIGH, N.C.
RICHMOND, VA.
SACRAMENTO, CALIF.
ST. LOUIS, MO.
SALT LAKE CITY, UTAH
SAN ANTONIO, TEXAS
SAN DIEGO, CALIF.
SAN FRANCISCO, CALIF.
SEATTLE, WASH.
WARWICK, R.I. (PROVIDENCE)

STOCKS AVAILABLE FROM WAREHOUSES IN PRINCIPAL CITIES

A.I.A. File 4-E-6

TECHNICAL INFORMATION

USG® METAL EDGE GYPSUM PLANK

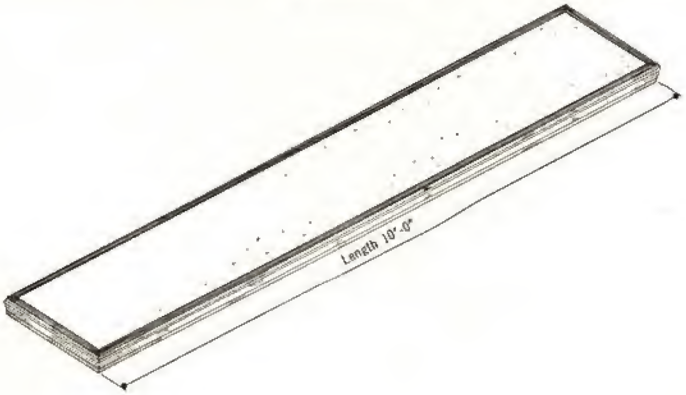
UNITED STATES GYPSUM

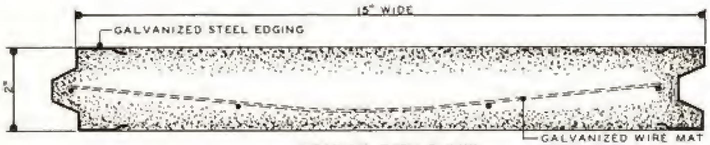
1959

UNITED STATES GYPSUM

A.I.A. File 4-E-6

METAL EDGE
GYPSUM ROOF PLANK





SECTION THRU PLANK

DESCRIPTION

USG Metal Edge Gypsum Plank is a precast structural roof deck unit 2 inches thick, 15 inches wide, and 10 feet long which weighs 10.5 pounds per square foot. Reinforced with 22 gauge galvanized steel tongue and groove edges and a 16 gauge galvanized wire mat, the unit is designed to span a maximum of 7 feet under normal design roof loads.

FUNCTION AND UTILITY

Interlocking Tongue and Groove. The accurately formed interlocking edges mate with adjacent plank, distributing the load. This design permits plank ends to occur off supports, and uniform spacing of roof purlins is therefore unnecessary.

Ease of Erection. The large size and interlocking edges permit easy, fast construction.

Winter Construction. Because the units are precast and laid without grout, winter delays are avoided.

Nailable—The dense gypsum provides good nail holding power. See data table on this page.

Strength. The unit has been tested to loads exceeding 200 pounds per square foot on a 6′-8″ span. Conforms to Federal Specification SS-S—439 and ASTM C377-56T.

Adaptability. USG Metal Edge Plank can be used on flat, pitched, and curved roofs, provided the radius of the curve exceeds 150 feet.

UPLIFT

Laboratory tests show Standard Attachment Clips will support loads up to 2100 pounds with failure by shear of the 4d nail attachment.

NAIL HOLDING POWER OF GYPSUM

Description of Nail	Holding Power of dry slab. Penetration ¼″ less than nail length. Lbs. per Nail
1¾″ LaBelle Square Cut	150 lbs.
1½″ Galvanized Roofing Nail	25 lbs.
1¾″ Independent Screw-Tite Squarehed	46 lbs.

THERMAL INSULATION VALUES

"U" Factor for complete roof slab including built-up roof covering (Btu per sq. ft., per hr., per deg. F. diff. in temperature)

Plank without added insulation—0.51 Btu
Plank with ½″ added insulation—0.30 Btu
Plank with 1″ added insulation—0.21 Btu

Note: The insulation considered is a rigid type wood fiber board with a "k" factor of .36

RECOMMENDATIONS—LIMITATIONS OF USE

Job Protection. During job storage, gypsum plank should be protected from exposure to rain and snow. Handle and store on edge. Use temporary wood planking over gypsum plank areas exposed to repetitive impact or wheel loads during construction.

Roof Covering. Apply built-up roof covering in accordance with roofing manufacturers' specifications as soon as possible after installation of gypsum plank. The recommended application of roofing to Metal Edge Gypsum Plank is by nailing the first sheet dry using nails providing a minimum penetration of 1¼″ (no more than 1½″) into the slab. If roofing is mopped on precautions should be taken to prevent leakage of pitch or asphalt through joints in the plank. Apply asphalt, asbestos or light slate shingles in accordance with manufacturers recommendations.

A 15 lb. felt underlayment is recommended.

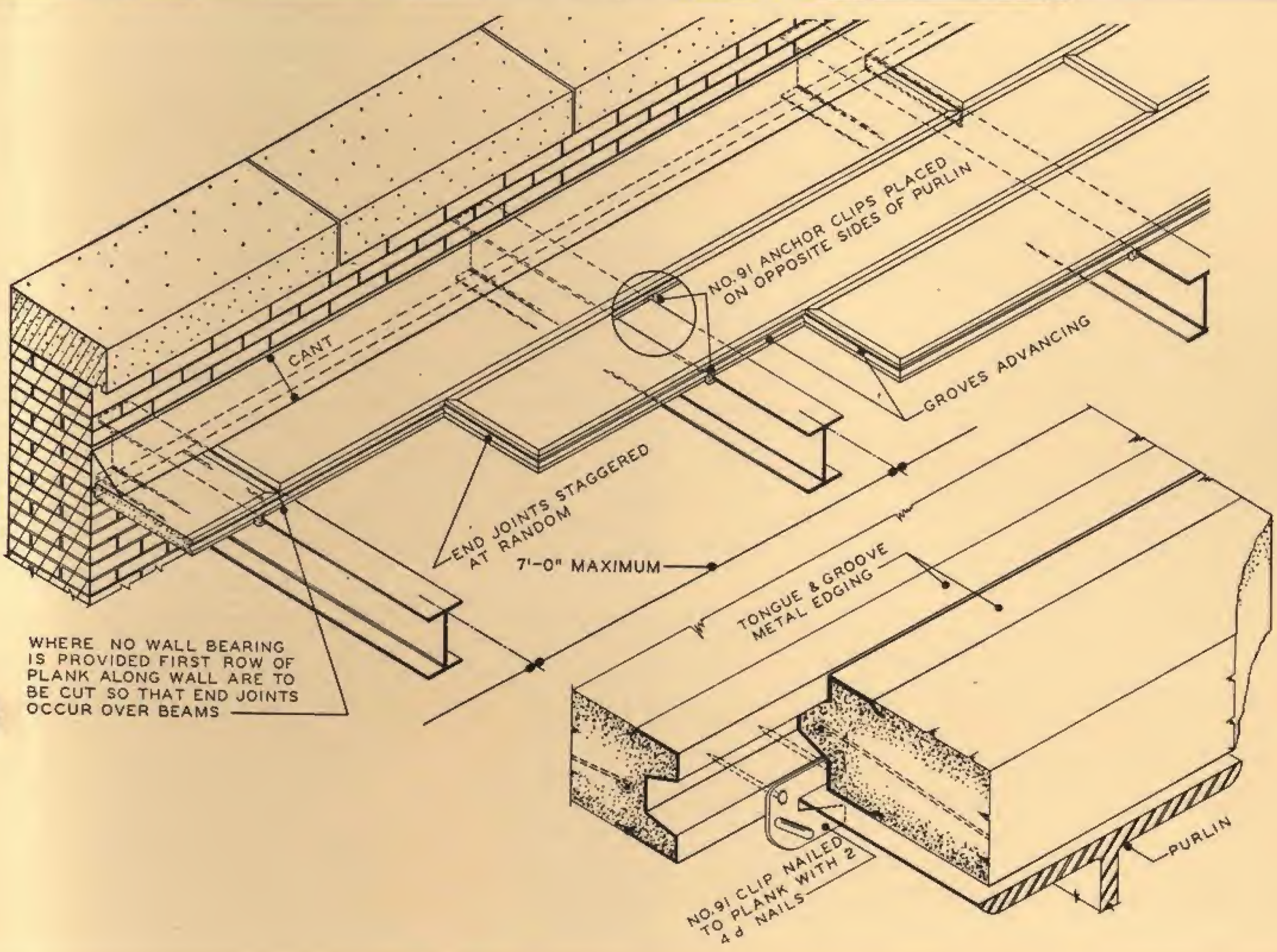
Excessive Moisture. Gypsum plank roofs are practical for all buildings having normal humidity conditions. Whenever continuous high humidity is anticipated, such as in wet process plants, consult the nearest USG Sales Office for recommendations.

High Temperature. Gypsum plank for roofs or floors perform satisfactorily on buildings exposing them to normal or moderately high temperatures. Where unusually high temperatures are expected, such as in foundries, furnace rooms, over breechings, etc., consult the nearest USG Sales Office for recommendations.

Steep Roofs. Gypsum plank can be used satisfactorily on steeply pitched roofs if precautions are taken to prevent thrust accumulation. See "f" under "erection".

Venting of Enclosed Spaces. All enclosed spaces beneath roof decks should be adequately vented to the outside. Such venting by small louvers or openings does not appreciably affect attic temperatures. Please refer to *Heating, Ventilating, Air Conditioning Guide*, published annually by the American Society of Heating and Air Conditioning Engineers for complete information on venting of attic spaces (Chapters 10 and 12).

"USG", "PYROFILL", "SHEETROCK", "DURAVAL", and "TEXOLITE" are registered trademarks owned by United States Gypsum, used by it to distinguish its products. "USG" identifies the particular gypsum plank and roof deck, "PYROFILL" and identify the particular gypsum concrete, "SHEETROCK", "DURAVAL" and "TEXOLITE" identify the particular sealer and paint manufactured only by United States Gypsum Company.


NO.91 ANCHOR CLIPS PLACED ON OPPOSITE SIDES OF PURLIN
CANT
GROVES ADVANCING
END JOINTS STAGGERED AT RANDOM
7'-0" MAXIMUM
TONGUE & GROOVE METAL EDGING
WHERE NO WALL BEARING IS PROVIDED FIRST ROW OF PLANK ALONG WALL ARE TO BE CUT SO THAT END JOINTS OCCUR OVER BEAMS
PURLIN
NO.91 CLIP NAILED TO PLANK WITH 2 4d NAILS

SPECIFICATIONS

Scope. Unless otherwise shown on plans, all roof areas shall be covered with gypsum plank, and all curbs, cants, saddles, etc., shall be as shown or specified herein.

Materials. *Gypsum plank* shall be 2″ x 15″ x 10′0″ metal edge gypsum plank, manufactured by United States Gypsum Company.

Clips and nails. The manufacturer of the gypsum plank shall furnish standard galvanized clips for attachment to main purlins, (200 clips per 1000 sq. ft.). Nails (2 per clip) shall be 4d galvanized slaters or 1″ smooth shank No. 11 ga. galvanized roofing nails.

Cants and saddles shall be formed of PYROFILL* gypsum fiber concrete manufactured by United States Gypsum Company.

SPECIAL FORMING

Ridges and Hips. Fill joints at ridges and hips with mortar consisting of USG Gypsum Grouting Cement and sand mixed in the proportion of 1 part cement to 2 parts clean sharp sand by volume.

Cants and Drainage Fills. All curbs, cants, drainage saddles, etc., shall be installed as indicated or required using PYROFILL Gypsum Fiber Cement mixed with clean water only in the proportion of 8 gallons of water to each 80 lb. bag of PYROFILL.

Painting. Plank must be dry before painting with sealing type oil or latex base paints. Galvanized edging must be freed from grease or oil by cleaning with mineral spirits or a similar solvent.

Edging can be painted with a zinc dust metal primer of the type meeting Federal Specification TTP—641—b, dated 1-23-53, Type II.

Seal gypsum surfaces with TEXOLITE* Vinyl Sealer or SHEETROCK* Sealer.

Allow metal primer and Sealer to dry. Apply one or two coats of USG DURAVAL* or equal latex paint, oil paint, or alkyd flat paint. If it is necessary to paint before plank is dry, prime metal edging as above. Paint edging and gypsum with USG TEXOLITE* Standard or equal casein paint which has been reinforced by additional fungicide such as 1¼ oz. Dowicide "G" per gallon of paste.

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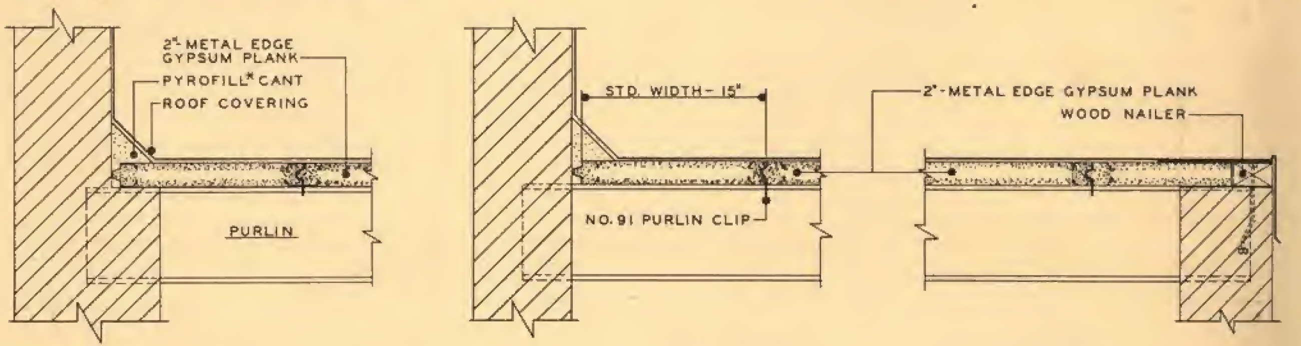
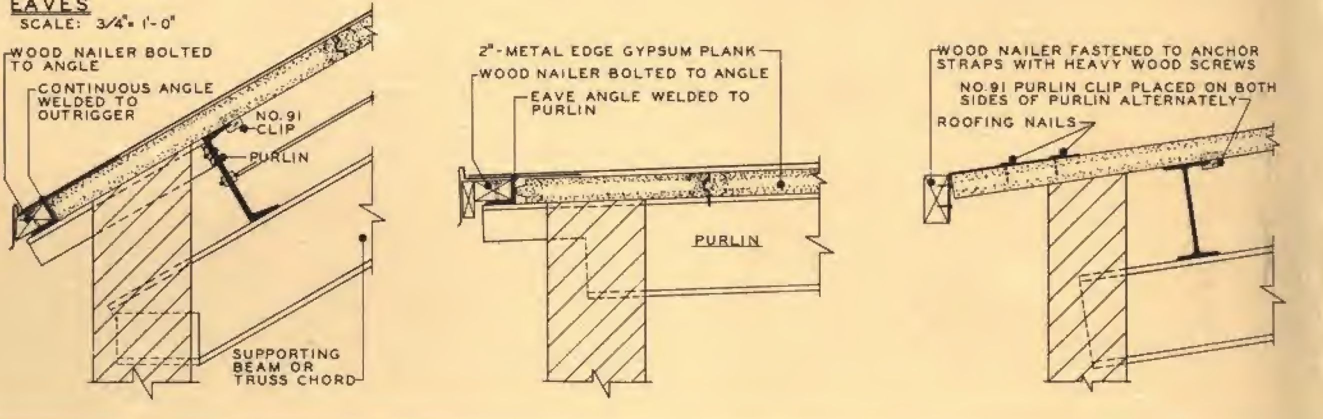
*T.M. Reg. U.S. Pat. Off

METAL EDGE GYPSUM ROOF PLANK

PARAPET & END WALL DETAILS
SCALE: 3/4" = 1'-0"



EAVES
SCALE: 3/4" = 1'-0"


WOOD NAILER BOLTED TO ANGLE
CONTINUOUS ANGLE WELDED TO OUTRIGGER
NO. 91 CLIP
PURLIN
SUPPORTING BEAM OR TRUSS CHORD
2"-METAL EDGE GYPSUM PLANK
WOOD NAILER BOLTED TO ANGLE
EAVE ANGLE WELDED TO PURLIN
PURLIN
WOOD NAILER FASTENED TO ANCHOR STRAPS WITH HEAVY WOOD SCREWS
NO. 91 PURLIN CLIP PLACED ON BOTH SIDES OF PURLIN ALTERNATELY
ROOFING NAILS

ERECTION

Placing of Plank. Start laying plank at one corner of each independent area.

All plank shall be laid dry with marked side up and with the GROOVE side advancing. Plank shall be placed on supporting steel with joints tightly interlocked.

Where no wall supports are provided along the longitudinal edge of the starting and final rows of plank, plank in these rows shall be cut so that end joints occur over roof supports. (When supports are provided along the wall, end joints may occur off the supports.)

End joints in adjacent rows shall be staggered not less than 30 inches. Alternate rows shall be started with full units or cut pieces long enough to have bearing at not less than two supports. End of rows shall be finished similarly. The remaining rows can be started (or finished) with cut plank long enough to have not less than one support. Cut plank to fit at walls, ridges, valleys and around openings as indicated or required.

Anchorage of Plank To Supports. Each plank shall be anchored to supporting members by the following method:

- **a.** Steel Purlins—Use one galvanized clip at every point of support. Where possible, alternate position of clips so that each clip is facing in opposite direction to the next one. Secure each clip to plank with 2 nails.
- **b.** Steel Purlins—Weld metal edging of plank to supports by flowing weld from the support to the plank edging being careful not to burn holes in the edging.
- **c.** Other Type Purlins—Where clip or weld cannot be used we suggest driving nails through the metal edging on both sides of the purlin and using a wire looped from nail to nail for anchor to the purlin.
- **d.** Concrete Joists—Use power driven studs fired through the plank, 2 studs per plank at each intersection, with penetration into the joist adequate for secure attachment. If steel plates are imbedded in concrete joists use method in (b) above.
- **e.** Wood Joists—Use two 16 penny nails at each intersection of plank with purlin. Drive nails so that their heads are flush with the top surface of the plank.
- **f.** Slopes over 30° on steel framing—Bolt plank to purlins using one bolt per plank at each intersection with a purlin. Bolt directly through the purlin or through a clip fixed to the underside. Bolt heads should be flush with the top of the plank.

TECHNICAL INFORMATION

PYROFILL* GYPSUM
CONCRETE ROOF DECKS

(WEST COAST EDITION)

UNITED STATES GYPSUM

West Coast Offices:

2322 W. Third St., Los Angeles 54, Calif.
1515 Sloat Blvd., San Francisco 16, Calif.
1888 S. W. 6th Ave., Portland, Oregon
3806 Stone Way, Seattle 3, Washington

1959

*T.M. Reg. U.S. Pat. Off.

UNITED STATES GYPSUM

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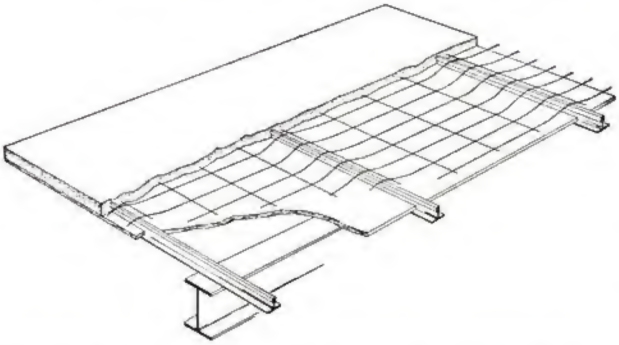
*T.M. Reg. U.S. Pat. Off.

. . . POURED GYPSUM DECK



PYROFILL* roof decks consist of incombustible, reinforced gypsum concrete slabs poured in place over permanent formboards by experienced USG Gypsum Roof Deck Contractors. The selection of formboards offered with PYROFILL decks provide high acoustical, insulating, and light reflecting properties without additional ceiling finish. An all-weather construction, PYROFILL decks have proven their strength and durability during 50 years of acceptance.

GYPSUM DECK

FORMBOARDS FOR REINFORCED PYROFILL GYPSUM CONCRETE

CHARACTERISTICS	SHEETROCK	USG ACOUSTICAL	USG INSULATION	ASBESTOS CEMENT
Thickness, in.	½	1	1	¼
Sizes width, in.	32 or 48	12	32 or 48	32
length	As required 12′-0″ max.	24 in.	As required 12′-0″ max.	48 in.
Weight psf	2.05	1.20	1.45	2.44
Thermal Conductance (K value)	1.43	.38	.33	2.70
Noise Reduction Coefficient	—	.65	.35††	—
Light Reflectivity (Unpainted)	66%	78%	55%†††	40%
Incombustible	Yes	No†	No†	Yes
Installation Service	Yes	Yes	Yes	Yes

†USG Insulation PYROFILL and USG Acoustical PYROFILL Decks are usually classed as incombustible with a deficiency penalty when combustible formboard is used.
††Mill primed USG Insulation Formboard—25%.
†††Mill primed USG Insulation Formboard—78%.

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DESCRIPTION

PYROFILL Roof Decks consist of incombustible, reinforced gypsum concrete slabs poured in place over permanent formboards. The selection of formboards offered with PYROFILL decks provide high acoustical, insulating, and light reflecting properties without additional ceiling finish.

FUNCTION AND UTILITY

Lightweight—The weights of PYROFILL deck constructions including sub-purlins are approximately as follows:

SHEETROCK PYROFILL	11.5 lb/sq ft
USG Insulation PYROFILL	11.0 lb/sq ft
USG Acoustical PYROFILL	10.8 lb/sq ft
Asbestos Board PYROFILL	13.1 lb/sq ft

Strong—In tests by nationally recognized laboratories, a continuous 2″ Reinforced PYROFILL slab and permanent formboards over supports spaced 32⅝″ on centers carried a total load equivalent to more than 450 lbs. per sq. ft. when thoroughly wet, and over 700 lbs. per sq. ft. when dry.

Incombustible—Underwriters' Laboratories, Inc., Test Report R3796 dated January 31, 1956 shows a poured gypsum concrete deck withstood 82 minutes of fire exposure, with temperatures up to 1700° F., without failure. SHEETROCK PYROFILL, and Asbestos Board PYROFILL decks will not burn. USG Insulation PYROFILL and USG Acoustical PYROFILL Decks are usually classed as incombustible with a small deficiency penalty when combustible formboard is used.

Durable—Gypsum is chemically inert and will not rot, burn or decay. Reinforced PYROFILL slabs have been in use for half a century and are still in excellent condition. Reinforced PYROFILL roof deck constructions are thoroughly proven by the test of time. Alterations can be made freely, as the slab can be cut and patched easily and quickly, with a minimum of expense.

Appearance—The permanent formboards provide a smooth, light colored ceiling of good-looking paneled surfaces. See "Decorating," Page 7.

Speed of Erection—No other monolithic type of poured concrete roof deck can be installed faster. PYROFILL sets quickly (within 30 minutes), permitting workmen to work on previously poured sections in pouring new sections. Up to 30,000 sq. ft. of roof area have been poured in one day.

All Weather Construction—These roof decks can be installed during the coldest weather in which men normally work. Sufficient heat within the gypsum is generated to prevent freezing during the set. See "Exposure," "Drying" and "Venting of Enclosed Spaces," Page 7.

Adaptability—Reinforced PYROFILL slabs may be installed on flat, warped, saw tooth, curved or pitched roof framing.

Seismic Loads—PYROFILL roof decks meet requirements for resistance to seismic forces as established by the Uniform Building Code (International Conference of Building Officials), California State Division of Architecture, and the building codes of the City of Los Angeles and the County of Los Angeles. Information and design details to meet these requirements are available on request. See pages 6 and 10.

Low Cost—The simplicity of design, light weight, and speed of erection combined with its other outstanding qualities of rigidity, fire resistance, and finished undersurface make the overall cost of this construction very economical.

DESIGN

Reinforced PYROFILL slabs (2″ of reinforced PYROFILL poured over permanent formboards) are designed to span continuously over sub-purlins.

Steel Sub-Purlins vary in size, weight and shape and are selected according to required span and loading. They provide anchorage of the deck against uplift, and restrict movement of the deck due to temperature change. Sub-purlins are spaced to accommodate 24″, 32″ or 48″ formboard widths with a slight tolerance for ease of formboard placement. When 48″ wide formboard is used with light sub-purlin sections, supporting steel spacing should not exceed 36″ on center.

Slab Reinforcement for PYROFILL ROOF DECKS is a BD 1214 galvanized wire mat with 12 gauge wires placed perpendicular to sub-purlins. When bulb tees are placed on 48⅝″ centers over bar joists on 36″ centers or less, 12 gauge wires are run perpendicular to the bar joists.

PYROFILL, a mill mixed gypsum concrete composed of calcined gypsum and wood chips, shavings or fibers, requires the job site addition of water only. It is poured in place over the formboards to an average thickness of not less than 2″.

REFERENCE: Complies with ASA—A59.1—1954 and ASTM C317—55.

INSTALLATION

Reinforced PYROFILL roof decks are installed by experienced U.S.G. Gypsum Roof Deck Contractors who are located conveniently in all parts of the U.S.A. This service insures the best in workmanship, quality and safety. Consult your USG representative for contractors serving your area.

FORMBOARDS

SHEETROCK Formboard is a rigid type gypsum board, ½ in. thick by 32 in. wide (or 48 in. wide), and made to specified lengths to fit purlin spacings. Treated to resist mildew effectively where adequate ventilation is provided. REFERENCE: Federal Specification SS-W-51a, Type A, and ASTM C-318-55.

USG Insulation Formboard is a rigid type natural color wood fiber insulation board 1″ or ¾″ thick, 32 in. wide (or 48 in. wide) and cut to specified lengths to fit purlin spacings. Treated to resist mildew effectively where adequate ventilation is provided. **Limitations** of Painted Acoustical Formboard (Page 5), also apply to Mill Primed Insulation Formboard.
REFERENCE: Federal Specification LLL-F-321b.

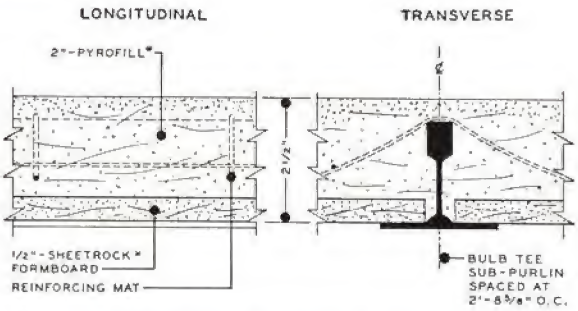
USG Acoustical Formboard is a rigid type wood fiber insulation board having a slotted or perforated acoustical surface shop painted white. It is 1″ x 12″ x 24″ in size and is treated to resist mildew effectively where adequate ventilation is provided. See page 5 for complete information.

Asbestos-cement Formboard is a rigid industrial type asbestos cement board, ¼ in. thick, cut to 32 in. wide by 48 in. long or cut to 24″ x 48″. Supplemental tees are required to support exposed end joints when they are not supported by the sub-structure. REFERENCE: Federal Specification SS-S-283a, Type F or U. NOTE: Asbestos-cement formboard is not manufactured by U.S.G.

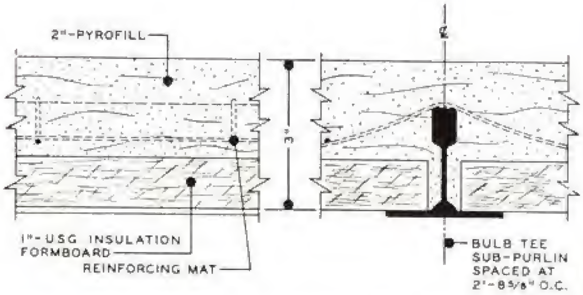
SLAB REINFORCEMENT

Steel Reinforcing for PYROFILL slabs is a welded type galvanized wire mat consisting of No. 12 gauge longitudinal wires spaced 4 in. on centers and No. 14 gauge transverse wires spaced 8 in. on centers—usually referred to as BD 1214 mat. The effective cross sectional area per foot width of slab (No. 12 gauge wires) is 0.026 sq. in. Other comparable types of mat may be used if their effective cross sectional area is equal to or greater than BD 1214 mat, and if they will give adequate bond.
NOTE: Reinforcing mats are not manufactured or sold by U.S.G.

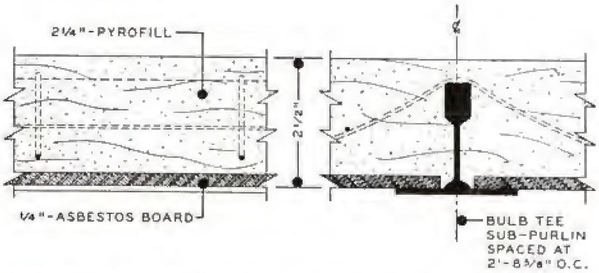
SCALE 3″ = 1′–0″



SHEETROCK PYROFILL ROOF DECK


2″-PYROFILL
℄
3″
1″-USG INSULATION FORMBOARD
REINFORCING MAT
BULB TEE SUB-PURLIN SPACED AT 2′-8⅝″ O.C.

USG INSULATION PYROFILL ROOF DECK



ASBESTOS CEMENT PYROFILL ROOF DECK

ACOUSTICAL AND LIGHT REFLECTING PROPERTIES

Formboard	Thickness	Noise Reduction Coefficient	Light Reflection Coefficient
SHEETROCK	½″	—	66%
Insulation	1″	.35	55%*
Acoustical	1″	.65	78%
Cement-asbestos	¼″	—	40%

*Mill-primed—78%

DESCRIPTION ACOUSTICAL FORMBOARD

USG Acoustical Formboard is a rigid type wood fiber insulation board with a slotted, perforated, or random perforated acoustical surface, shop painted white. Both board and paint are treated to resist mildew effectively where adequate ventilation is provided.
The 1 in. x 12 in. x 24 in. units are erected on bulb tees spaced 24⅝ in. on center. Used with a 2-in. reinforced PYROFILL gypsum concrete slab, USG Acoustical Formboard provides a rigid, paintable, insulation roof deck with excellent acoustical properties.

FUNCTION AND UTILITY

High Acoustical Absorption—Noise reduction coefficient (NRC) = .65 for no. 4 mounting.

High Light Reflectivity—78%.

Excellent Appearance—Hi-Lite finish (shop painted white).

Lightweight—USG Acoustical Formboard weighs but 1.2 lbs. per sq. ft.

Insulative—"K" factor for 1" Acoustical Formboard is 0.38. See table on page 8 for comparative U factors.

Paintable—Brush paintable without loss of noise reduction efficiency. The deck should be thoroughly dry before painting.

Economy—Considerably lower in cost than regular deck construction plus separate acoustical treatment.

INSTALLATION

The installation method used for USG Acoustical PYROFILL Roof Deck is basically the same as for other PYROFILL constructions.

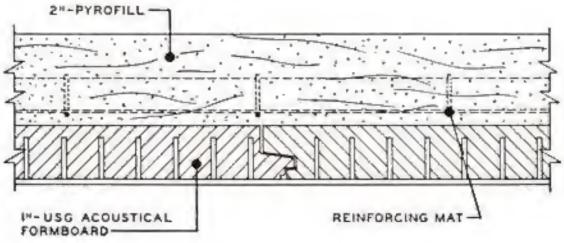
Sub-purlins are spaced 24⅝" on center, so this closer spacing permits greater loads than the sub-purlin load table indicates on page 9. To determine the load carrying capacity for any sub-purlin shown in this table multiply the tabulated load shown by 1.327. For example, a tabulated load of 35 psf would become 46 psf.

LIMITATIONS OF USE

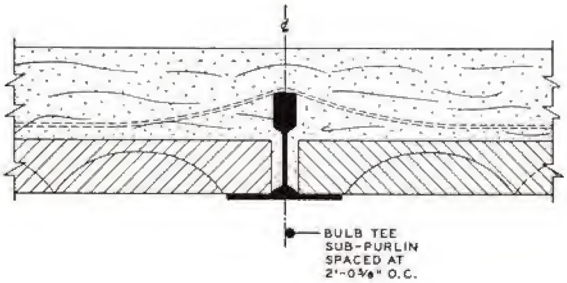
USG Acoustical Formboard, shop painted white, is susceptible to water staining. United States Gypsum cannot assume responsibility for such staining. If staining occurs, the board may be field painted after the slab is dry.

SCALE 3" = 1'-0"

USG ACOUSTICAL PYROFILL ROOF DECK



LONGITUDINAL



TRANSVERSE

USG ACOUSTICAL FORMBOARD SOUND ABSORPTION COEFFICIENTS

Riverbank Laboratories Test No. A52-25

Type	Thickness	Mounting	Coefficients						NRC
			125	250	500	1000	2000	4000	
Slotted	1"	#4	.18	.37	.56	.77	.83	.74	.65

THERMAL INSULATION VALUES: USG ACOUSTICAL-PYROFILL ROOF DECKS

(Including roofing—supporting steel not included)

Description of Construction	U Factor
Exposed underside, no added insulation	.20
Exposed underside, plus ½" roof insulation	.16
Exposed underside, plus 1" roof insulation	.13

PYROFILL
GYPSUM ROOF DECKS | *APPROVED DIAPHRAGM*

DESCRIPTION

PYROFILL Roof Decks consisting of incombustible, reinforced gypsum concrete slabs poured in place over permanent formboards have been approved in the County of Los Angeles and many of the 1,000 cities which use the Uniform Building Code. See Allowable Diaphragm Values in the Technical Data table this page.

Design procedure is similar to that of reinforced concrete, using the gypsum stress values allowed by the applicable code. Expensive rod or angle bracing systems can be eliminated, making PYROFILL Roof Deck very low in cost.

See Diaphragm Details—page 10.

DIAPHRAGM TESTS

Large Scale Diaphragm Test—S. B. Barnes, prominent West Coast Consulting Engineer, in 1954, 1956 and 1957, designed and executed three separate series of horizontal load tests on a total of 31 panels. The testing was done by Frederick J. Converse, Professor of Civil Engineering, California Institute of Technology, and by the Smith-Emery Testing Laboratory of Los Angeles.

The highly favorable performance of PYROFILL Roof Deck as a rigid diaphragm in each series of tests resulted in a recommendation by Engineer Barnes for increases in the shear and dowel values then allowed by the Building codes.

CLASSES—ALLOWED VALUES

Class "A" PYROFILL containing not more than 12½% wood fiber has a minimum ultimate compressive strength of 500 lbs. per sq. in. **Class "B"** PYROFILL containing not more than 3% wood fiber has a minimum ultimate compressive strength of 1000 lbs. per sq. in. The shear value on each Class of PYROFILL Roof Deck currently allowed under the various codes is shown in the following paragraphs.

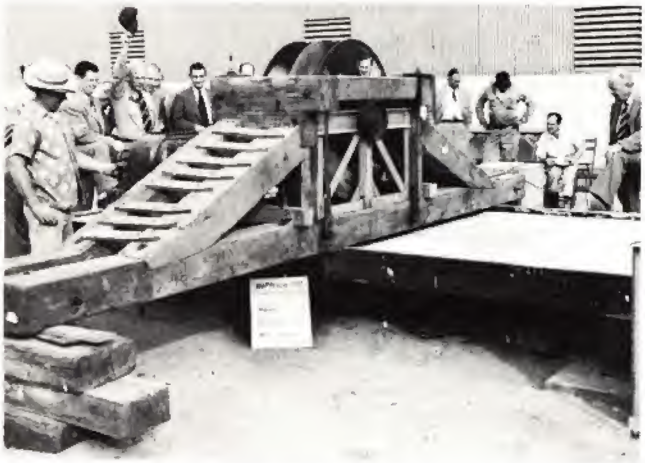
California Schools, City of Los Angeles, City of San Francisco: These codes currently allow 320 lbs. per lin. ft. shear value for 2" of Class "A" PYROFILL and 640 lbs. per lin. ft. for 2" of Class "B" PYROFILL. Both values include the 33⅓% increase for short time loading. Proportionately higher shears are allowed for increased thicknesses of PYROFILL. These code groups now have under consideration applications for higher values based on the results of the many panel tests.

Dowel Values: Currently, most codes allow a value of 350 lbs. per ½" dowel embedded 5" in gypsum concrete.

VIBRATING LOAD TEST

PYROFILL Gypsum Roof Deck panels were subjected to heavy vibrating loads in the comprehensive tests described below.

Extracts from the Barnes Report of this test (1): "The picture gives an idea of the size and setting of 'Galloping Gertie'. The rotating wheels balance the vertical components at the center of the wheel. However, the location of the center of horizontal thrust was high above the test slab and the whole machine was eccentric in its position on the panel. This produced a severe vertical rocking. The recording instruments indicated that the vertical component was about equal to and in some cases greater than the horizontal component. This was anticipated and was felt to be proper since earthquakes usually have both horizontal and vertical components."



Vibrating Machine

"When static test loading was continued after vibration the ultimate strength of panels was affected very little."

Engineer Barnes states "This machine, in my opinion, produced vibrations more severe and over a longer period of time than would be anticipated in most earthquakes."

(1) Copy available upon request.

UNIFORM BUILDING CODE

The Research Committee of the International Conference of Building Officials recommends that shear in poured gypsum concrete diaphragms be determined by the formula $Q = 1.1\,(0.30\, f_g\, t + 2500\, A_m)$ where;

Q = Allowable shear on diaphragm in pounds per lin. foot, including the 33⅓% increase for short time loading.

f_g = Compressive strength of gypsum concrete in p.s.i.

t_g = Thickness of gypsum concrete over formboards in inches not less than two inches (2") nor more than three and one-half inches (3½").

A_m = Total area of reinforcing mesh at the sub-purlin in square inches considering the mesh area in both directions where properly lapped.

The application of this equation for commonly used thicknesses and mesh types for each class of gypsum are shown in the table below.

TECHNICAL DATA(1)—*Diaphragm*

Class	Compressive Strength	Poured Gypsum Thickness	Mesh		Allowable Shear (2)
A	500	2"	4" x 8"	12-14	426—lb. lin. ft.
A	500	2½"	4" x 8"	12-14	508—lb. lin. ft.
A	500	2½"	6" x 6"	10-10	570—lb. lin. ft.
B	1000	2"	4" x 8"	12-14	756—lb. lin. ft.
B	1000	2½"	4" x 8"	12-14	921—lb. lin. ft.
B	1000	2½"	6" x 6"	10-10	982—lb. lin. ft.

(1) From equation $Q = 1.1\,(0.30\, f_g\, t + 2500\, A_m)$

(2) Allowable shear value including 33⅓% increase for short time loading.

RECOMMENDATIONS AND LIMITATIONS OF USE

Excessive Moisture or Temperature—PYROFILL roof decks are suitable for all types of buildings and occupancy with normal temperature and humidity conditions. Where intermittent very high temperatures occur, it is advisable to use cement-asbestos board PYROFILL roof decks. Where abnormally high humidity conditions prevail, such as in wet process plants, or where unusually high temperatures prevail such as in foundries, over breechings, in furnace rooms, etc., consult your USG representative for recommendations.

Exposure—During application, PYROFILL roof decks withstand the effects of normal rainfall, snow, freezing and thawing; however, they should be covered as soon as practicable. The water-proof (built-up type) roof covering should be applied as soon as the top surface of the slab is reasonably dry; i.e., when there is no visible moisture gloss. For the application of built-up roof covering, we recommend that the first 2 plies of the felt be nailed. We suggest a 5d or 6d square cut nail through a metal roofing cap. See table of nail holding values on page 8.

Drying—PYROFILL roof slabs dry out from the underside (through the formboard). Adequate heat and ventilation below the slab are required to permit the escape of this moisture. In buildings without windows or with fixed windows adequate mechanical (forced) ventilation is required to remove all construction moisture. PYROFILL is not recommended as a fill over concrete slabs, steel decks, and other decks of low permeability. Consult your USG representative if unusual conditions prevail.

Ventilating of Enclosed Spaces—The underside of a PYROFILL Deck should not be enclosed by a ceiling before the deck is dry. The enclosed space should always be vented to the outside. Such venting by small louvers or openings does not appreciably affect attic temperatures. Please refer to *Heating, Ventilating, Air Conditioning Guide,* published annually by the American Society of Heating and Air Conditioning Engineers for complete information on venting of attic spaces (Chapters 10 & 12).

Acids—Acid fumes generally are not harmful to gypsum although they may be harmful to framing materials. If acid fumes are considered a problem, consult your USG representative.

Heavy Loads—Although the reinforced PYROFILL slab will carry loads in excess of 100 lbs. per sq. ft. with adequate factors of safety, the sub-purlins or bar joists govern the safe load limit. All superimposed concentrated loads, such as flag pole bases, water tanks and ventilating fans, must be directly or indirectly supported on steel framing, not on the gypsum slab.

Steep Roofs—PYROFILL roof slabs are designed to receive built-up roof coverings. On steep roofs, where slate, ceramic tile or rigid type shingle roof coverings are required, the use of USG METAL EDGE GYPSUM PLANK is recommended. See page 8 for PYROFILL nail holding data.

Expansion and Contraction—PYROFILL Roof Decks, like all roof decks, are subject to expansion and contraction due to temperature changes. Bulb tees welded to steel framing limit slab movement that would exert itself at right angles to the direction of the bulb tees. The following is suggested as a guide:

1. Provide expansion joints in the deck and the roofing wherever they are provided in the main structure.
2. Long narrow buildings should have expansion joints through the deck and the supporting structure spaced not more than 200 ft. apart.
3. Separate wings of "L," "U" and "T" shaped buildings with expansion joints.
4. A mineral fiber filler strip should be installed between all junctures of roof slabs with parapet walls, stacks, etc. See details on page 11.

To enable you to resolve specific problems the coefficient of linear expansion of gypsum concrete is .0000085 inches per inch per °F. See *Steel Construction,* Manual of the A.I.S.C., for method of calculating expansion of bodies by heat.

Decorating—PYROFILL Roof Decks do not generally require further decorating, as the formboards provide a presentable undersurface. When decoration is desired, painting should not be done until the slab is thoroughly dry. Before painting, the slab should be checked for dryness throughout its entire thickness. An electric type moisture meter can be used if contacts are driven well into interior of slab. Casien or Resin emulsion paints give best results. Exposed metal, such as sub purlin flanges, should be protected with a suitable metal primer before finish coats are applied.

All finish coats must be treated to effectively resist mildew.

Suspended Ceilings—Suspended ceilings under PYROFILL roof decks should be hung from the structural steel frame. If they are hung from the roof deck, the hangers should be attached to the sub-purlins, never to the gypsum slab alone. When hung from the sub-purlins, the sub-purlins must be capable of supporting the total weight including ceiling with a deflection not to exceed 1/360 of their span. See selection table on page 9 for load values of various sub-purlins.

Uplift—During hurricanes or high winds all roof decks are subject to uplift forces. Therefore, roof decks should be anchored to supports to resist this uplift. In developing adequate resistance, the total dead load of the roof deck can be considered as part of the total resistance. In laboratory tests, PYROFILL roof decks, using steel rails or bulb tee sub-purlins welded to the steel framing, have an average uplift resistance equivalent to more than 125 lbs. per sq. ft. Slabs with standard tee or flanged channel (fence post sections) sub-purlins and slabs over bar-joist should have supplemental anchorage to develop the required uplift resistance.

REFERENCE: Armour Research Foundation Test M1068.

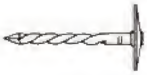
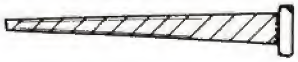
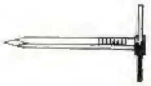
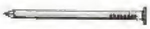
SLAB WEIGHTS AND THERMAL INSULATION VALUES

	Approx. Slab Weight per Square Foot	(Btu per sq. ft., per hr., per deg. F. diff. in temperature) "U" Factor for complete roof slab including built-up roof covering (supporting steel not included)		
		No Insulation	½" Insulation	1" Insulation
2½" SHEETROCK PYROFILL Roof Slab 2" PYROFILL Gypsum Concrete Over ½" SHEETROCK	10.7	0.38	0.24	0.18
3" U.S.G. Insulation PYROFILL Roof Slab 2" PYROFILL Gypsum Concrete Over 1" U.S.G. Insulation Formboard	10.1	0.19	0.15	0.12
3" U.S.G. Acoustical PYROFILL Roof Slab 2" PYROFILL Gypsum Concrete Over 1" Acoustical Formboard	9.9	0.20	0.16	0.13
2½" Asbestos Board PYROFILL Roof Slab 2¼" PYROFILL Gypsum Concrete Over ¼" Asbestos Board	12.2	0.39	0.25	0.19

NOTES:
1. For total weight of roof deck add weight of sub-purlins to the approx. slab weights shown above.
2. The component materials weigh approximately: PYROFILL 52 lbs. cu. ft. ½" SHEETROCK 2.05 lbs. sq. ft. 1" U. S. G. Insulation Formboard 1.45 lbs. per sq. ft. (1" U. S. G Acoustical Formboard 1.2 lbs. sq. ft.) ¼" Asbestos board 2.44 lbs. per sq. ft.

NAIL HOLDING POWER

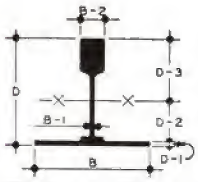
Resistance to direct pull in pounds per nail for penetration shown

Type of nail		Screw-Tite Squarehed**	La Belle Square Cut Nails (Wheeling)		Gypsum Deck Nails*		Wire Nails
			6-Penny Common	6-Penny Cornice	1½"	1¾"	7-Penny Common
Finish		Plain	Plain or Galv.	Plain or Galv.	Plain	Plain	Plain
Head dimension		1⁵⁄₁₆" square	.27"x.21"	.34"x.28"	dia. .975"	dia. .975"	¼" Round
Shank at head		.125"	.19"x.114"	.23"x.14"	.152"x.103"	.197"x.125"	11.5 Ga.
Shank at point		.125"	.10"x.07"	.13"x.08"	.092"x.071"	.125"x.115"	11.5 Ga.
Details and Lengths							
		1¾"	2"	2"			2¼"
Penetration		1½"	1.75"	1.75"	1.25"	1.50"	2.0"
Holding power	Wet	46.5	26.5	34.0	14.5	28.0	—
in PYROFILL	Dry	62.0	226.0	180.0	116.0	181.0	28.0

NOTES:
1. Values shown are from tests conducted by USG Research Laboratory.
2. Nails were driven by hand with a hammer and withdrawn immediately by means of a weighted lever arm.
3. The dry density of the PYROFILL was approximately 52 pounds per cu. ft.
4. Other nails of the same shank size and penetration should give equal holding power.

* Manufactured by Crescent Brass & Pin Co., Detroit.
** Manufactured by Independent Nail & Packing Co., Bridgewater, Mass.

SUB-PURLIN PROPERTIES AND DIMENSIONS



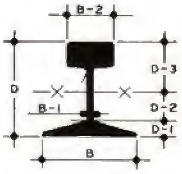
BULB TEE

TYPE	Wt. Lbs. Ft.	I in 4	S in 3	B inches	B¹ inches	B² inches	D inches	D¹ in.	D² in.	D³ inches
1480 Bulb. T. (B)	1.55	0.146	0.173	1.5000	0.100	0.4375	1.5000	0.100	0.558	0.8420
3158 Bulb. T. (W)	1.50	0.160	0.161	1.4375	0.109+	0.3125	1.6875	0.109	0.582	0.9965
158 Bulb. T. (I)	1.50	0.162	0.165	1.5625	0.109+	0.3750	1.6250	0.109	0.532	0.9840
1680 Bulb. T. (B)	2.00	0.251	0.261	1.6250	0.120	0.5000	1.7500	0.120	0.650	0.9800
168 Bulb. T. (I)	2.00	0.247	0.240	1.6250	0.125	0.4370	1.7500	0.132	0.590	1.0280
3168 Bulb. T. (W)	2.00	0.247	0.240	1.6250	0.125	0.4375	1.7500	0.132	0.590	1.0280
3178 Bulb. T. (W)	2.47	0.397	0.324	2.0000	0.141	0.5000	2.0000	0.141	0.635	1.2240
1780 Bulb. T. (B)	2.40	0.348	0.332	1.8750	0.125	0.5625	1.8750	0.125	0.701	1.0490
178 Bulb. T. (I)	2.50	0.364	0.340	1.9000	0.140	0.5620	1.8750	0.140	0.665	1.0700
200 Bulb. T. (I)	3.00	0.503	0.460	2.0630	0.140	0.6560	2.0000	0.140	0.768	1.0920
2025 Bulb. T. (B)	3.00	0.512	0.464	2.2500	0.125	0.6875	2.0000	0.125	0.897	1.1030
3218 Bulb. T. (W)	3.01	0.561	0.472	2.0625	0.140	0.5940	2.1250	0.140	0.795	1.1900
218 Bulb. T. (I)	3.00	0.598	0.520	2.1250	0.125	0.6875	2.1250	0.140	0.975	1.1500
2180 Bulb. T. (B)	3.05	0.621	0.520	2.2500	0.125	0.7500	2.1250	0.125	0.827	1.1730
214 Bulb. T. (B)	3.20	0.671	0.494	2.3750	0.141	0.6250	2.2500	0.109	0.783	1.3580
2140 Bulb. T. (B)	3.65	0.852	0.738	2.1250	0.125	0.8750	2.3125	0.125	1.032	1.5600
3228 Bulb. T. (W)	3.65	0.852	0.738	2.0000	0.125	0.8750	2.3125	0.125	1.032	1.1560
3258 Bulb. T. (W)	4.67	1.370	1.050	2.2500	0.141	0.9375	2.6250	0.141	1.172	1.3125

(I) Inland Steel Company—38 S. Dearborn St., Chicago 3, Ill.
(B) Buffalo Steel Corp.—Tonawanda, N. Y.
(W) West Virginia Steel & Mfg. Co., Huntington, W. Va.

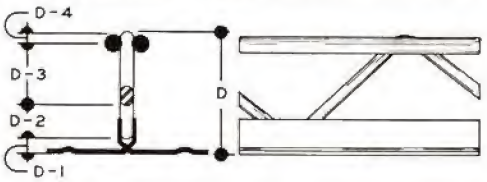
Note: All properties shown are taken from data furnished by manufacturers indicated above.

A.S.C.E..RAIL



TYPE	Wt. Ft.	I in. 4	S in. 3	B Inches	B¹ In.	B² Inches	D Inches	D¹ Inches	D² Inches	D⁴ Inches
12 Lbs. PerYd. (W)	4.00	0.66	0.63	2.0000	—	1.0000	2.0000	0.3438	0.6162	1.0400
16 Lbs. PerYd.(W)(B)	5.33	1.24	1.01	2.3750	—	1.1718	2.3750	0.3750	0.7720	1.2280
20 Lbs. PerYd.(W)(B)	6.67	1.94	1.43	2.6250	—	1.3437	2.6250	0.4375	0.8305	1.3570
25 Lbs. PerYd. (W)	8.33	2.50	1.77	2.7500	—	1.5000	2.7500	0.4844	0.8532	1.4124

TRUSSED TEE (E)



SIZE	I in.^{4}	S BTM	S TOP	D¹	D²	D³	D⁴	2 Wires in.^{2}	1 Wire in.^{2}	2 Angles in.^{2}
5-9-16 D=1¾"	.1123	.1919	.1057	.1694	.4157	1.0614	.1035	.0672	.0173	.1718
4-5-16 D=2"	.1860	.3054	.1454	.1307	.4779	1.2787	.1127	.0797	.0336	.2135
4-5-16 D=2½"	.3025	.4062	.1841	.1307	.6139	1.6427	.1127	.0797	.0336	.2135
1-5-16 D=2"	.2433	.3155	.2238	.1307	.6406	1.0872	.1415	.1258	.0336	.2135
1-5-16 D=2½"	.3999	.4180	.2853	.1307	.8260	1.4018	.1415	.1258	.0336	.2135
0-5-14 D=2"	.2861	.3833	.2601	.1409	.6057	1.1001	.1533	.1476	.0336	.2681
0-5-14 D=2½"	.4723	.5111	.3320	.1409	.7832	1.4226	.1533	.1476	.0336	.2681

(E) Edge Steel Products, Inc.—Olathe, Kansas
Consult Manufacturer for safe allowable loads.

SUB-PURLINS FOR 2-INCH PYROFILL SLABS OVER FORMBOARDS

VALUES SHOWN ARE BASED ON properties determined by each sub-purlin manufacturer. Sub-purlins Spaced 2'8⅝" on Centers, fs @ 20.000 psi, M—1/10 WL except as noted
Exceptions to spacing and slab thickness are noted in the table.

SUB-PURLINS				SAFE TOTAL LOAD in pounds per sq. ft. uniformly distributed for spans of 3'0" to 12'0" in increments of 6 inches																			Maximum Eave Overhang (See Note 10)
TYPE	S in³	Weight Pounds Lin. Ft.	Weight Pounds Sq. Ft.	3'0"	3'6"	4'0"	4'6"	5'0"	5'6"	6'0"	6'6"	7'0"	7'6"	8'0"	8'6"	9'0"	9'6"	10'0"	10'6"	11'0"	11'6"	12'0"	
1480 Bulb-T (B)	.173	1.55	0.57	117	86	66	52	42	35														2'1"
3158-X Bulb-T (W)	.161	1.45	0.53	110	81	62	49	39	33														2'1"
158 Bulb-T (I)	.165	1.50	0.54	112	83	63	50	40	33														2'1"
168 Bulb-T (I)	.240	2.00	0.74		120	92	73	59	49	41	35	30											2'6"
3168 Bulb-T (W)	.240	2.00	0.74		120	92	73	59	49	41	35	30											2'7"
1680 Bulb-T (B)	.261	2.00	0.74			100	79	64	53	44	37	33											2'8"
3178 Bulb-T (W)	.324	2.47	0.91			124	98	79	66	55	47	41	35	3									2'11"
1780 Bulb-T (B)	.332	2.40	0.88			127	100	81	67	56	48	41	36	31									3'0"
178 Bulb-T (I)	.340	2.50	0.92			130	103	83	69	58	49	43	37	33									3'0"
200 Bulb-T (I)	.460	3.00	1.10				139	113	93	78	67	58	50	44	39	35	31						3'6"
2025 Bulb-T (B)	.464	3.00	1.10					114	94	79	67	58	51	44	39	35	31						3 6"
3218 Bulb-T (W)	.472	3.01	1.11					116	96	80	68	59	51	45	40	36	32						3'7"
214 Bulb-T (B)	.494	3.20	1.18					121	100	84	71	61	53	47	42	37	33	31					3'9"
2180 Bulb-T (B)	.520	3.05	1.12					127	104	88	75	64	56	49	43	39	35	32					3'9"
218 Bulb-T (I)	.520	3.00	1.10						105	89	75	65	57	50	44	39	35	32					3'9"
12-lb. Rail (W)	.630	4.00	1.47						128	107	91	79	69	59	53	*48	*42	*38	*34	*31			4'2"
2140 Bulb-T (B)	.738	3.65	1.33	Spacing 2'9"							101	92	80	70	63	56	50	45	41	37	31	31	4'5"
3228 Bulb-T (W)	.738	3.65	1.33	Spacing 2'9"							106	91	80	70	62	55	50	45	41	37	34	31	4'5"
16-lb. Rail (W) (B)	1.010	5.33	1.94	Spacing 2'9"								125	109	96	85	75	68	61	*55	*49	*45	*42	5'2"
3258 Bulb-T (W)	1.050	4.67	1.69	Min. Thickness = 3" Total—Spacing 2'9"								130	113	99	88	78	71	64	58	53	44	44	5'4"
20-lb. Rail (W) (B)	1.430	6.67	2.42	Min. Thickness = 3" Total—Spacing 2'9"										135	120	107	96	87	79	72	65	58	6'2"
25-lb. Rail (W)	1.770	8.33	3.03	Min. Thickness = 3¼" Total—Spacing 2'9"												132	119	107	97	89	81	75	6'11"

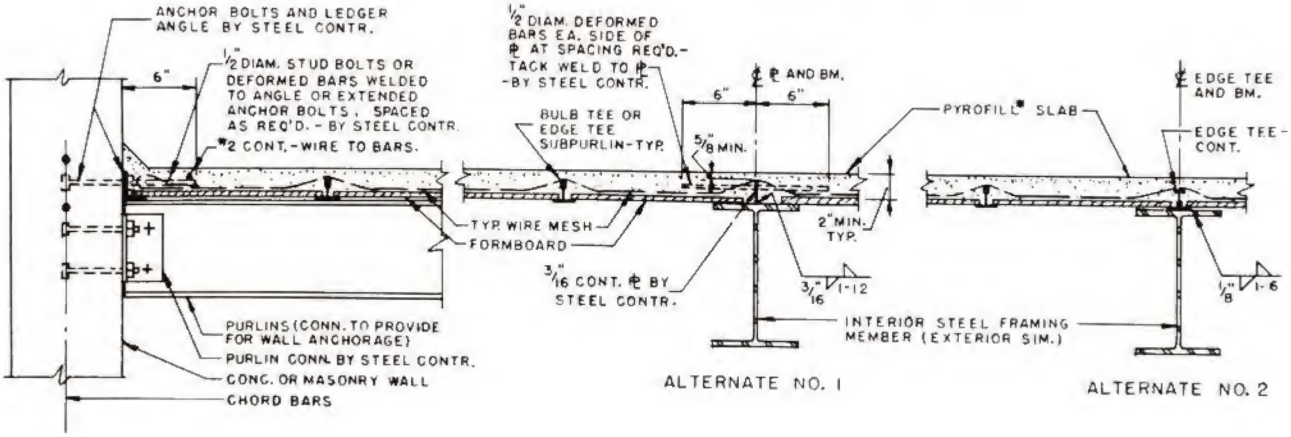
Notes: 1. Loads to left of heavy line have deflections less than 1/360 of span—To Right over 1/360 but less than 1/240 of span. 2. Loads marked * limited by deflection—deflection based on semi continuous spans or $D = \frac{006884wl^4}{EI}$

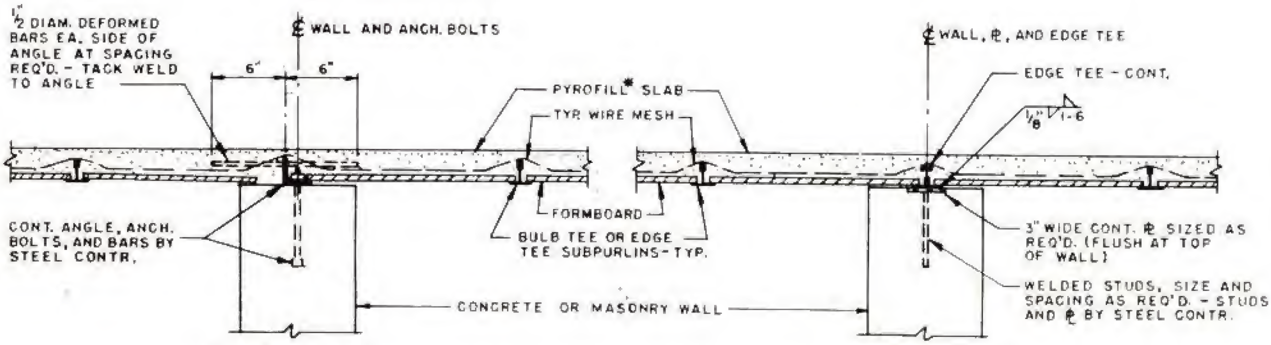
3. To determine total safe load for Bending Moment of ⅛ WL use 80% of the tabulated load. 4. To determine total safe load for a maximum fiber stress of 18,000 psi use 90% of tabulated load. 5. For suspended ceilings use loads shown to the left of the heavy line; or 75% of loads shown to right of the heavy line can generally be safely used. 6. The most economical spans are from 6'0" to 8'0"—Values for other sub-purlin spacings can be determined by direct ratio. 7. (I) Inland Steel Co. (B) Buffalo Steel Corp. (W) West Virginia Steel & Mfg. Co. 8. We do not recommend using design loads less than 35 pounds per sq. ft. These are indicated by light type. 9. For values of Acoustical slabs with 24¾" spacing multiply values shown by 1.327. 10. Values shown are for a total load of 45 pounds per sq. ft. Bending moment "M" = ½ WL. Spaced as indicated.

APPLICATION OVER BEAMS AND BAR JOISTS

details | **Scale 3/4″ = 1′-0″**

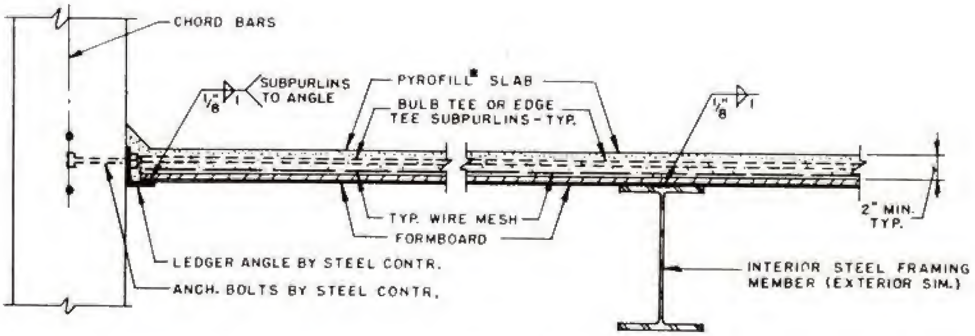
**Details (By Barnes)
to meet Seismic
Design Requirements**


ANCHOR BOLTS AND LEDGER ANGLE BY STEEL CONTR.
1/2" DIAM. STUD BOLTS OR DEFORMED BARS WELDED TO ANGLE OR EXTENDED ANCHOR BOLTS, SPACED AS REQ'D. - BY STEEL CONTR.
*2 CONT.-WIRE TO BARS.
6"
1/2" DIAM. DEFORMED BARS EA. SIDE OF ℄ AT SPACING REQ'D.-TACK WELD TO ℄-BY STEEL CONTR.
℄ ℄ AND BM.
6"
6"
BULB TEE OR EDGE TEE SUBPURLIN-TYP.
5/8" MIN.
PYROFILL* SLAB
℄ EDGE TEE AND BM.
EDGE TEE-CONT.
TYP. WIRE MESH
FORMBOARD
2" MIN. TYP.
3/16" CONT. ℄ BY STEEL CONTR.
3/16" 1-12
1/8" 1-6
INTERIOR STEEL FRAMING MEMBER (EXTERIOR SIM.)
PURLINS (CONN. TO PROVIDE FOR WALL ANCHORAGE)
PURLIN CONN. BY STEEL CONTR.
CONC. OR MASONRY WALL
CHORD BARS
ALTERNATE NO. 1
ALTERNATE NO. 2


1/2" DIAM. DEFORMED BARS EA. SIDE OF ANGLE AT SPACING REQ'D. - TACK WELD TO ANGLE
℄ WALL AND ANCH. BOLTS
6"
6"
PYROFILL* SLAB
TYP. WIRE MESH
℄ WALL, ℄, AND EDGE TEE
EDGE TEE - CONT.
1/8" 1-6
CONT. ANGLE, ANCH. BOLTS, AND BARS BY STEEL CONTR.
FORMBOARD
BULB TEE OR EDGE TEE SUBPURLINS-TYP.
3" WIDE CONT. ℄ SIZED AS REQ'D. (FLUSH AT TOP OF WALL)
WELDED STUDS, SIZE AND SPACING AS REQ'D. - STUDS AND ℄ BY STEEL CONTR.
CONCRETE OR MASONRY WALL

ALTERNATE NO. 1 ALTERNATE NO. 2

SUBPURLINS PARALLEL TO SHEAR RESISTING ELEMENTS


CHORD BARS
1/8" 1
SUBPURLINS TO ANGLE
PYROFILL* SLAB
BULB TEE OR EDGE TEE SUBPURLINS-TYP.
1/8" 1
TYP. WIRE MESH
FORMBOARD
2" MIN. TYP.
LEDGER ANGLE BY STEEL CONTR.
ANCH. BOLTS BY STEEL CONTR.
INTERIOR STEEL FRAMING MEMBER (EXTERIOR SIM.)

SUBPURLINS PERPENDICULAR TO SHEAR RESISTING ELEMENTS

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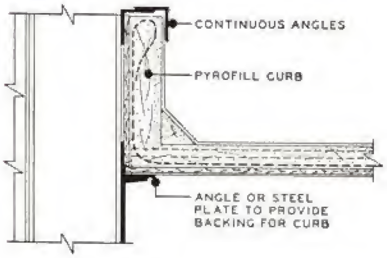
* T.M. REG. U.S. PAT. OFF.

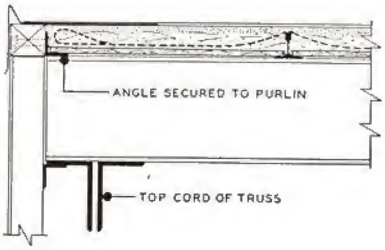
APPLICATION OVER BEAMS AND BAR JOISTS

details | **Scale ¾" = 1'-0"**

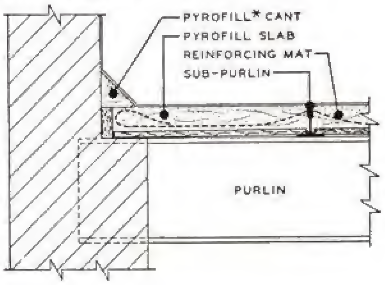
CURB



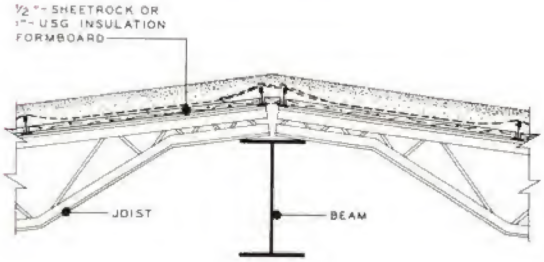
EAVE



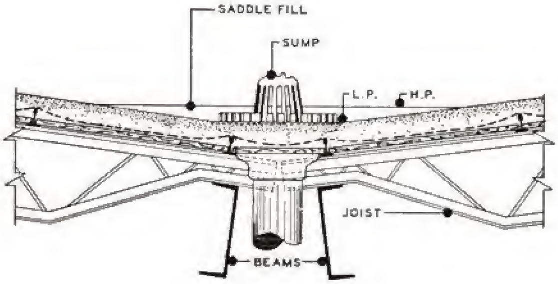
WALL DETAIL



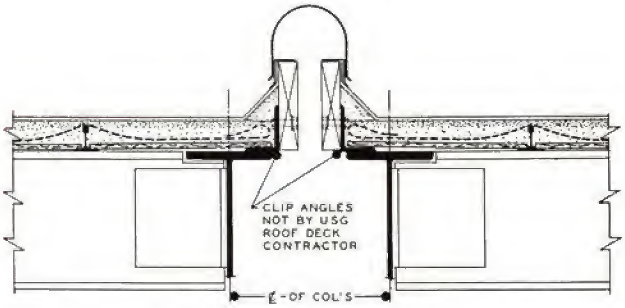
RIDGE DETAIL



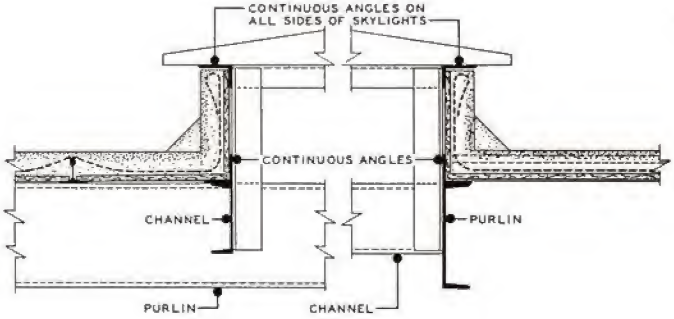
VALLEY DETAIL



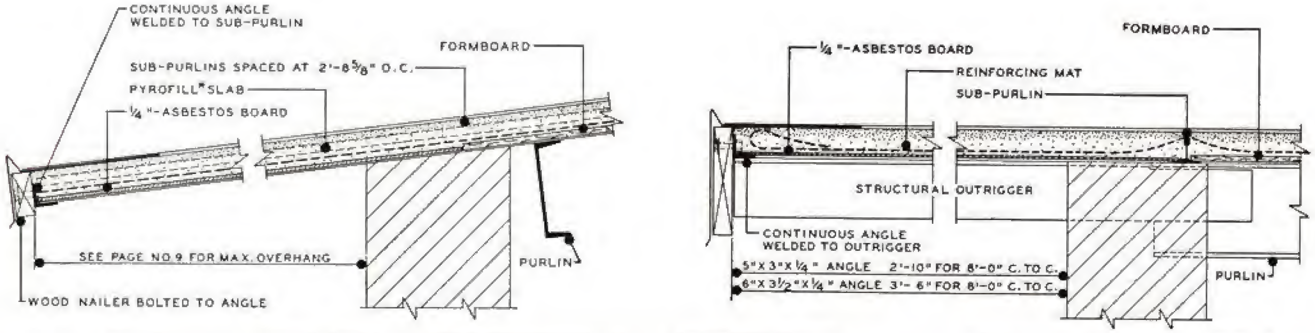
EXPANSION JOINT



SKYLIGHT DETAIL

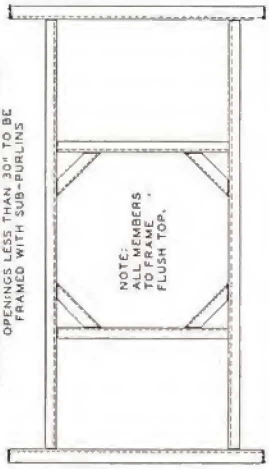


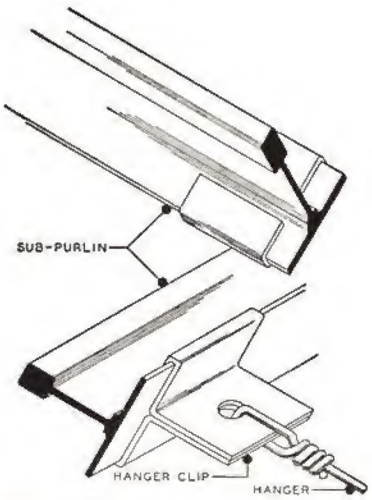
EAVE & GABLE OVERHANG
(OVERHANG BASED ON 45#/□' TOTAL LOAD)

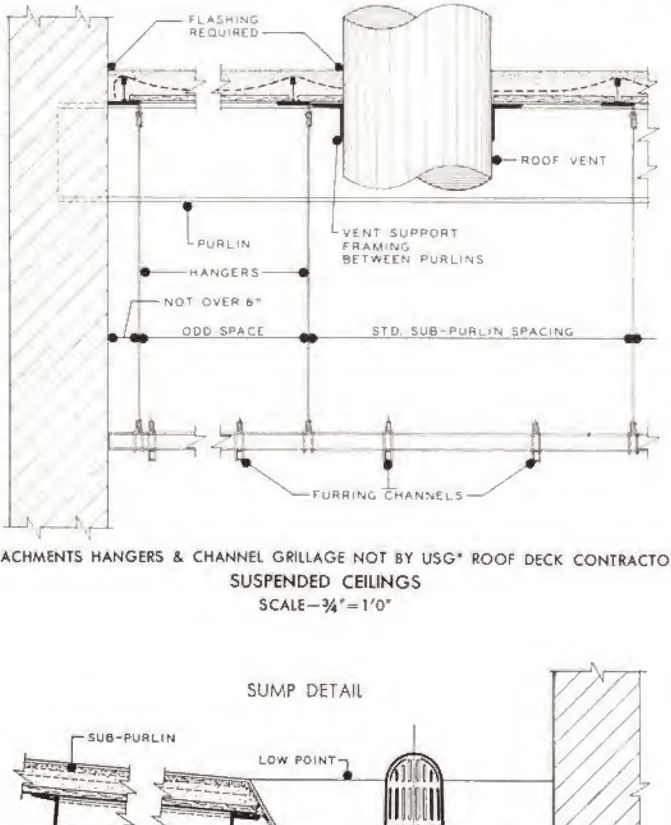

CONTINUOUS ANGLE WELDED TO SUB-PURLIN
FORMBOARD
SUB-PURLINS SPACED AT 2'-8⅝" O.C.
PYROFILL* SLAB
¼"-ASBESTOS BOARD
SEE PAGE NO.9 FOR MAX. OVERHANG
PURLIN
WOOD NAILER BOLTED TO ANGLE
FORMBOARD
¼"-ASBESTOS BOARD
REINFORCING MAT
SUB-PURLIN
STRUCTURAL OUTRIGGER
CONTINUOUS ANGLE WELDED TO OUTRIGGER
5"X3"X¼" ANGLE 2'-10" FOR 8'-0" C. TO C.
6"X3½"X¼" ANGLE 3'-6" FOR 8'-0" C. TO C.
PURLIN

PYROFILL
GYPSUM ROOF DECKS

HANGER DETAIL

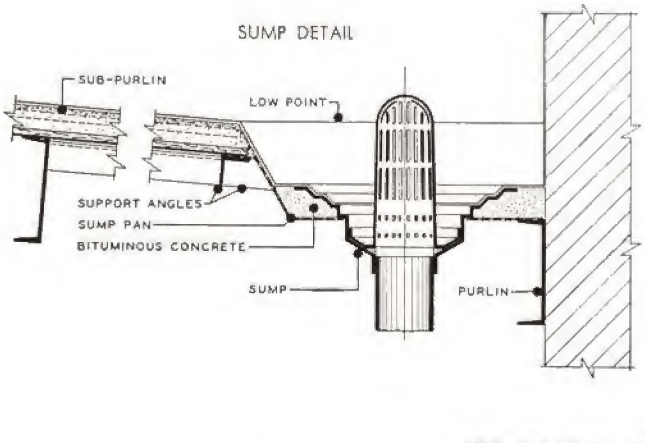

TYPICAL FRAMING AROUND OPENINGS LARGER THAN 30"
OPENINGS LESS THAN 30" TO BE FRAMED WITH SUB-PURLINS
NOTE: ALL MEMBERS TO FRAME FLUSH TOP.





ATTACHMENTS HANGERS & CHANNEL GRILLAGE NOT BY USG* ROOF DECK CONTRACTOR
SUSPENDED CEILINGS
SCALE—¾"=1'0"

SUMP DETAIL



*T.M. Reg. U.S. Pat. Off.

SPECIFICATIONS

Scope of Work. The contractor shall furnish all labor, material, and equipment and install complete the poured gypsum roof decks, together with cants, curbs, and drainage fills as shown and specified. Approved shop drawings are required before work proceeds.

Materials. 1. Steel Sub-Purlins: Steel sub-purlins shall be an approved type capable of carrying the required dead load and live load, all to be cut to length and shop painted with one coat of an approved paint. All end joints are to bear on roof supports.

2. Formboards: Permanent formboards shall be (select as required):

a. USG ½" treated SHEETROCK formboard 32" wide, (for 48" see page 4: design) in lengths equal to main purlin spacings; provided, however, that where purlin spacings are 10 ft. or greater, formboard shall be one half the length of purlin spaces, with approved galvanized or painted tees to support cross-joints between sub-purlins.

b. 1" or ¾" treated USG Insulation Formboard 32" wide, in lengths equal to main purlin spacings.

c. USG Acoustical Formboard, 1" x 12" x 24", for sub-purlins spaced 24⅝" on center.

d. Asbestos cement board ¼" x 32" x 48", complete with approved galvanized or painted sheet metal tees to support end joints where not supported by the roof framing.

3. Reinforcing Mesh: Reinforcement in the poured gypsum slab shall be a galvanized welded wire mesh having 1 gauge longitudinal wires spaced 4" on center, or equivalent type, having an effective cross sectional area of not less than 0.026 sq. in. per foot of slab width.

4. Gypsum Concrete: Gypsum concrete shall be USG PYROFILL consisting of calcined gypsum and not more than 12½ per cent by weight of wood chips, shavings, or fibers.

Installation. 1. Steel Sub-Purlins: Place and weld each sub-purlin to main purlins at each contact point, using fillet welds ½" minimum length placed on alternate sides of sub-purlins where accessible.

2. Formboards: Place formboards on sub-purlin flanges with all end or cross-joints supported, forms to fit neatly on all four edges. Cut forms to fit at walls, curbs, and openings as required.

3. Reinforcement: Place reinforcing mesh with 12 gauge wires at right angles to sub-purlins. Lap mesh ends at least 6 inches. Do not lap sides of mesh. Cut mesh to fit at walls, curbs, and openings, and carry mesh into all areas where PYROFILL is poured.

4. Gypsum concrete: Mix PYROFILL with clean water only, as directed on bags. Pour over formboards to average depth of at least 2 inches. Screed all surfaces to a smooth, even plane ready to receive waterproof roof covering specified in another section. Pour cants, curbs, and drainage fills as shown or required. After pouring, leave roof deck free and clean for other trades.

Notes To Architect. Expansion joints should also be provided in the roof deck if they are provided in the main structure.

Where resistance to uplift forces is required, the bulb tee, trussed tee, and ASCE type sub-purlins are most effective. Other types may require supplementary anchorage.

Where suspended ceilings are required, USG recommends that they be hung from the main purlins wherever economically feasible. If they are hung to the roof deck, the hangers should be attached to the sub-purlins, never to the gypsum slab itself. Added weight of suspended ceiling affects sub-purlin size.

A.I.A. File 4-E-6
4-L
13-C

TECHNICAL INFORMATION

USG® ROOF DECKS

UNITED STATES GYPSUM

1959

A.I.A. File 4-E-6
4-L
13-C

USG
ROOF DECKS

POURED GYPSUM DECKS

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PRECAST GYPSUM DECK

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STEEL ROOF DECKS

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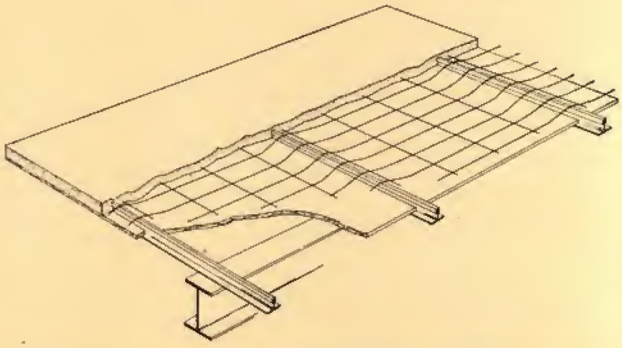
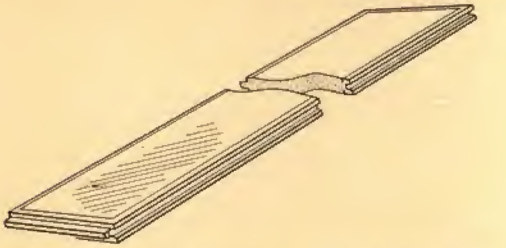
*TM Reg. U. S. Pat. Off.

. . . POURED



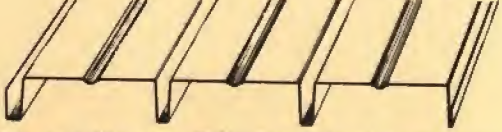
PYROFILL* roof decks consist of incombustible, reinforced gypsum concrete slabs poured in place over permanent formboards by experienced USG Gypsum Roof Deck Contractors. The selection of formboards offered with PYROFILL decks provide high acoustical, insulating, and light reflecting properties without additional ceiling finish. An all-weather construction, PYROFILL decks have proven their strength and durability during 50 years of acceptance.

. . . PRECAST



USG* Metal Edge Gypsum Plank is an incombustible, reinforced deck unit designed for fast erection, high strength, and all-weather installation.

. . . STEEL



18, 20, and 22 gauge USG Steel Roof Decks are cold rolled, mill primed or galvanized, low carbon steel units ready for installation as they come to the job.

"PYROFILL," "PYROFORM," "SHEETROCK," "USG," "DURAVAL" and "TEXOLITE" are registered trademarks owned by United States Gypsum, used by it to distinguish its products. "PYROFILL" identifies the particular gypsum concrete, "PYROFORM" and "SHEETROCK" identify the particular formboard, "USG" identifies the particular gypsum plank and roof deck, "DURAVAL," "SHEETROCK" and "TEXOLITE" identify the particular sealer and paint manufactured only by United States Gypsum Company.

GYPSUM DECK

CHARACTERISTICS	FORMBOARDS FOR REINFORCED PYROFILL GYPSUM CONCRETE				
	SHEETROCK	STANDARD PYROFORM	USG ACOUSTICAL	USG INSULATION	ASBESTOS CEMENT
Thickness, in.	½	1	1	1	¼
Sizes width, in.	32 or 48	24 or 32	12	32 or 48	32
length	As required 12′-0″ max.	As required 8′-0″ max.	24 in.	As required 12′-0″ max.	48 in.
Weight psf	2.05	1.30	1.20	1.45	2.44
Thermal Conductance (K value)	1.43	.24	.38	.33	2.70
Noise Reduction Coefficient	—	.75	.65	.35††	—
Light Reflectivity (Unpainted)	66%	50–60%	78%	55%†††	40%
Incombustible	Yes	Yes	No.†	No.†	Yes
Installation Service	Yes	Yes	Yes	Yes	Yes

†USG Insulation PYROFILL and USG Acoustical PYROFILL Decks are usually classed as incombustible with a deficiency penalty when combustible formboard is used.
††Mill primed USG Insulation Formboard—25%.
†††Mill primed USG Insulation Formboard—78%.

GYPSUM DECK

CHARACTERISTICS	
Size	2″x15″x10′-0″
Roof Area per unit—sq. ft.	12.5
Weight (psf)	10.5
Maximum Recommended Span	7′-0″
"U" Value—including roofing	.51
Thermal Conductance	2.38
Incombustible	Yes
Nailable	Yes

ROOF DECK

CHARACTERISTICS			
Plate width	18″		
Maximum plate length	27′-2½″		
Nominal rib depth	1½″		
Top rib opening	⅝″		
"U" Value with ½″ roof insulation	0.39		
Gauges	18	20	22
Weight—psf	3.15	2.35	2.00
Section Modulus	.230	.170	.143

PYROFILL GYPSUM ROOF DECKS

DESCRIPTION

PYROFILL Roof Decks consist of incombustible, reinforced gypsum concrete slabs poured in place over permanent formboards. The selection of formboards offered with PYROFILL decks provide high acoustical, insulating, and light reflecting properties without additional ceiling finish.

FUNCTION AND UTILITY

Lightweight—The weights of PYROFILL deck constructions including sub-purlins are approximately as follows:

SHEETROCK PYROFILL	11.5 lb/sq ft
PYROFORM PYROFILL	10.9 lb/sq ft
USG Insulation PYROFILL	11.0 lb/sq ft
USG Acoustical PYROFILL	10.8 lb/sq ft
Asbestos Board PYROFILL	13.1 lb/sq ft

Strong—In tests by nationally recognized laboratories, a continuous 2″ Reinforced PYROFILL slab and permanent formboards over supports spaced 32⅝″ on centers carried a total load equivalent to more than 450 lbs. per sq. ft. when thoroughly wet, and over 700 lbs. per sq. ft. when dry.

Incombustible—Underwriters' Laboratories, Inc., Test Report R3796 dated January 31, 1956 shows a poured gypsum concrete deck withstood 82 minutes of fire exposure, with temperatures up to 1700° F., without failure. SHEETROCK PYROFILL, PYROFORM PYROFILL and Asbestos Board PYROFILL decks will not burn. USG Insulation PYROFILL and USG Acoustical PYROFILL Decks are usually classed as incombustible with a deficiency penalty when combustible formboard is used.

Durable—Gypsum is chemically inert and will not rot, burn or decay. Reinforced PYROFILL slabs have been in use for half a century and are still in excellent condition. Reinforced PYROFILL roof deck constructions are thoroughly proven by the test of time. Alterations can be made freely, as the slab can be cut and patched easily and quickly, with a minimum of expense.

Appearance—The permanent formboards provide a smooth, light colored ceiling of good-looking paneled surfaces. See "Decorating," page 10.

Speed of Erection—No other monolithic type of poured concrete roof deck can be installed faster. PYROFILL sets quickly (within 30 minutes), permitting workmen to work on previously poured sections in pouring new sections. Up to 30,000 sq. ft. of roof area have been poured in one day.

All Weather Construction—These roof decks can be installed during the coldest weather in which men normally work. Sufficient heat within the gypsum is generated to prevent freezing during the set. See "Exposure," "Drying" and "Venting of Enclosed Spaces," Page 5.

Adaptability—Reinforced PYROFILL slabs may be installed on flat, warped, saw tooth, curved or pitched roof framing.

Seismic Loads—PYROFILL roof decks meet requirements for resistance to seismic forces as established by the Uniform Building Code (Pacific Coast Building Officials Conference), California State Division of Architecture, and the building codes of the City of Los Angeles and the County of Los Angeles. Information and design details to meet these requirements are available on request.

Low Cost—The simplicity of design, light weight, and speed of erection combined with its other outstanding qualities of rigidity, fire resistance, and finished undersurface make the overall cost of this construction very economical.

DESIGN

Reinforced PYROFILL slabs (2″ of reinforced PYROFILL poured over permanent formboards) are designed to span continuously over sub-purlins.

Steel Sub-Purlins vary in size, weight and shape and are selected according to required span and loading. They provide anchorage of the deck against uplift, and restrict movement of the deck due to temperature change. Sub-purlins are spaced to accommodate 24″, 32″ or 48″ formboard widths with a slight tolerance for ease of formboard placement. When 48″ wide formboard is used with light sub-purlin sections, supporting steel spacing should not exceed 36″ on center.

Slab Reinforcement for PYROFILL ROOF DECKS is a BD 1214 galvanized wire mat with 12 gauge wires placed perpendicular to sub-purlins. When bulb tees are placed on 48⅝″ centers over bar joists on 36″ centers or less, 12 gauge wires are run perpendicular to the bar joists.

PYROFILL, a mill mixed gypsum concrete composed of calcined gypsum and wood chips, shavings or fibers, requires the job site addition of water only. It is poured in place over the formboards to an average thickness of not less than 2″.

REFERENCE: Complies with ASA—A59.1—1954 and ASTM C317—55.

INSTALLATION

Reinforced PYROFILL roof decks are installed by experienced U.S.G. Gypsum Roof Deck Contractors who are located conveniently in all parts of the U.S.A. This service insures the best in workmanship, quality and safety. Consult your USG representative for contractors serving your area.

FORMBOARDS

SHEETROCK Formboard is a rigid type gypsum board, ½ in. thick by 32 in. wide (or 48 in. wide), and made to specified lengths to fit purlin spacings. Treated to resist mildew effectively where adequate ventilation is provided. REFERENCE: Federal Specification SS-W-51a, Type A, and ASTM C318-55.

PYROFORM Mineral Fiber Formboard is a rigid, incombustible, insulative, acoustical formboard. Supplemental tees are required to support exposed end joints when they are not supported by the sub-structure. See page 6 for complete information.

USG Insulation Formboard is a rigid type natural color wood fiber insulation board 1 and ¾" thick, 32 in. wide (or 48 in. wide). and cut to specified lengths to fit purlin spacings. Treated to resist mildew effectively where adequate ventilation is provided.

LIMITATIONS OF USE. Painted Acoustical Formboard (Page 7), also apply to Mill Primed Insulation Formboard.

REFERENCE: Federal Specification LLL-F-321b.

USG Acoustical Formboard is a rigid type wood fiber insulation board having a slotted or perforated acoustical surface shop painted white. It is 1" x 12" x 24" in size and is treated to resist mildew effectively where adequate ventilation is provided. See page 7 for complete information.

Asbestos-cement Formboard is a rigid industrial type asbestos cement board, ¼ in. thick, cut to 32 in. wide by 48 in. long. Supplemental tees are required to support exposed end joints when they are not supported by the sub-structure. REFERENCE: Federal Specification SS-S-283a, Type F or U.

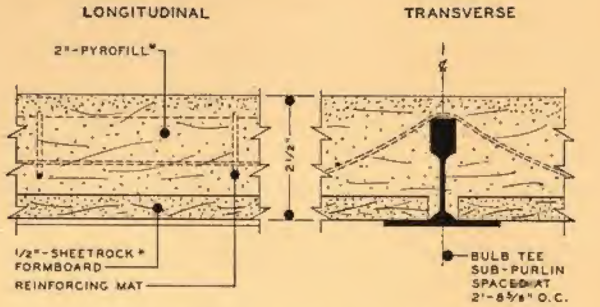
NOTE: Asbestos-cement formboard is not manufactured by U.S.G.

SLAB REINFORCEMENT

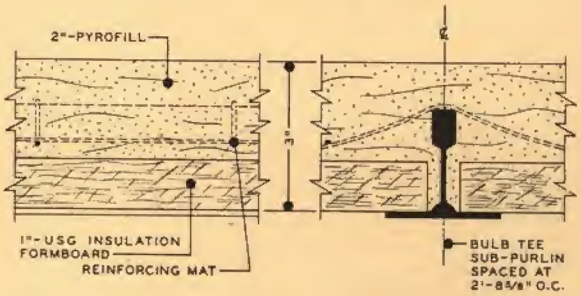
Steel Reinforcing for PYROFILL slabs is a welded type galvanized wire mat consisting of No. 12 gauge longitudinal wires spaced 4 in. on centers and No. 14 gauge transverse wires spaced 8 in. on centers—usually referred to as BD 1214 mat. The effective cross sectional area per foot width of slab (No. 12 gauge wires) is 0.026 sq in. Other comparable types of galvanized mat may be used if their effective cross sectional area is equal to or greater than BD 1214 mat, and if they will give adequate bond.

NOTE: Galvanized reinforcing mats are not manufactured or sold by U.S.G.

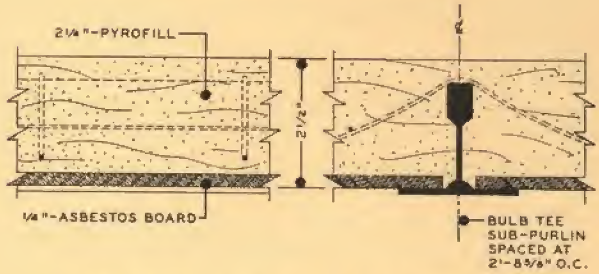
SCALE 3" = 1'-0"


LONGITUDINAL
TRANSVERSE
2"-PYROFILL*
2½"
1/2"-SHEETROCK* FORMBOARD
REINFORCING MAT
BULB TEE SUB-PURLIN SPACED AT 2'-8⅝" O.C.

SHEETROCK PYROFILL


2"-PYROFILL
3"
1"-USG INSULATION FORMBOARD
REINFORCING MAT
BULB TEE SUB-PURLIN SPACED AT 2'-8⅝" O.C.

USG INSULATION PYROFILL



ASBESTOS CEMENT PYROFILL

ACOUSTICAL AND LIGHT REFLECTING PROPERTIES

Formboard	Thickness	Noise Reduction Coefficient	Light Reflection Coefficient
SHEETROCK	½"	—	66%
PYROFORM	1"	.75	50–60%
Insulation	1"	.35	55%*
Acoustical	1"	.65	78%
Cement-asbestos	¼"	—	40%

*Mill-primed—78%

DESCRIPTION PYROFORM FORMBOARD

PYROFORM Mineral Fiber Formboard was designed specifically as a formboard for PYROFILL Decks, and provides the strength and rigidity required for this use. PYROFORM Formboard, together with PYROFILL, the original gypsum concrete, provides a sturdy, incombustible roof deck with high insulation and acoustical values.

PYROFORM is available in these styles:

Economy—for use where formboard will not be exposed.

Standard—with membrane, for use where acoustical value and medium light reflectivity is desired.

Caution: The surface appearance of standard PYROFORM may not be acceptable on low ceilings when a finished surface is required.

FUNCTION AND UTILITY

Acoustical Ceiling—Standard PYROFORM may be left exposed as an acoustical ceiling with high sound absorption. See Table at right.

Paintable—Meets requirements of Federal Specifications SS-A-118b. It may be decorated by spray paint without appreciable loss in acoustical absorption. The deck should be thoroughly dry before painting. See "DECORATION" on Page 10.

Incombustible—PYROFORM has been tested by Underwriters' Laboratories, Inc. in accordance with ASTM E84-50T and is listed with a 0-5 flame spread classification. PYROFORM also qualifies under Class A (incombustible) of Federal Specification SS-A-118b.

Insulative—PYROFORM leads all formboards in thermal efficiency. Average thermal conductance ("C" value) at a nominal 1" thickness is .24 btu/sq. ft./°F. See table at right for U-factor values.

Sizes—PYROFORM, in 1", 1¼", 1½", 1¾", and 2" thicknesses, is available in the following widths and lengths to fit job requirements:

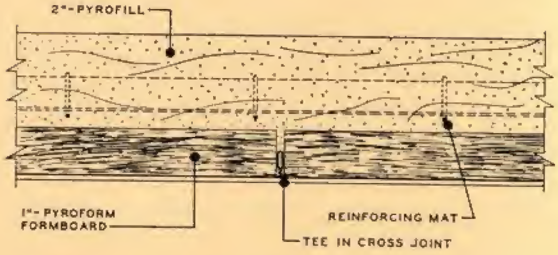
32 in. wide, 48 in. long
32 in. wide, 42 in. through 47¾ in. long, in ¼ in. increments.
24 in. wide, 36 in. through 96 in. long, in ¼ in. increments.

LIMITATIONS OF USE

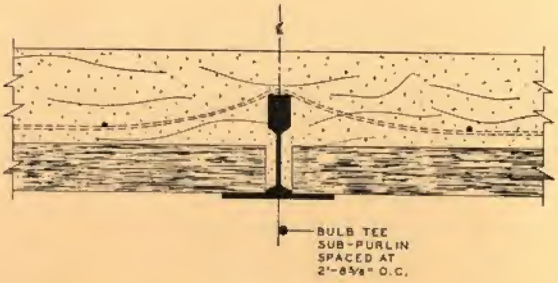
PYROFORM Mineral Fiber Formboard should always be stored in a dry place. The normal moisture from a PYROFILL slab has no effect on the performance of PYROFORM. Soaking of the formboard prior to the pouring of the slab can result in excessive deflection. The roof covering should be applied as soon as possible after erection to protect the construction from precipitation.

SCALE 3" = 1'–0"

PYROFORM PYROFILL



LONGITUDINAL



TRANSVERSE

PYROFORM SOUND ABSORPTION COEFFICIENTS
(Riverbank Laboratories Test No. A 55-53)

Type	Thickness	Mounting	Coefficients						NRC
			125	250	500	1000	2000	4000	
Membrane Faced	1"	#4	.08	.36	.84	.90	.93	.91	.75

THERMAL INSULATION VALUES: PYROFORM-PYROFILL ROOF DECKS
(Including roofing—supporting steel not included)

Description of Construction	U Factor
Exposed underside, no added insulation	.16
Exposed underside, plus 1" roof insulation	.11
Vented air space and ¾" plaster ceiling beneath, no added insulation	.13

DESCRIPTION ACOUSTICAL FORMBOARD

USG Acoustical Formboard is a rigid type wood fiber insulation board with a slotted, perforated, or random perforated acoustical surface, shop painted white. Both board and paint are treated to resist mildew effectively where adequate ventilation is provided.
The 1 in. x 12 in. x 24 in. units are erected on bulb tees spaced 24⅝ in. on center. Used with a 2-in. reinforced PYROFILL gypsum concrete slab, USG Acoustical Formboard provides a rigid, paintable, insulation roof deck with excellent acoustical properties.

FUNCTION AND UTILITY

High Acoustical Absorption—Noise reduction coefficient (NRC) = .65 for no. 4 mounting.

High Light Reflectivity—78%.

Excellent Appearance—Hi-Lite finish (shop painted white).

Lightweight—USG Acoustical Formboard weighs but 1.2 lbs. per sq. ft.

Insulative—"K" factor for 1″ Acoustical Formboard is 0.38. See table on page 8 for comparative U factors.

Paintable—Brush paintable without loss of noise reduction efficiency. The deck should be thoroughly dry before painting.

Economy—Considerably lower in cost than regular deck construction plus separate acoustical treatment.

INSTALLATION

The installation method used for USG Acoustical PYROFILL Roof Deck is basically the same as for other PYROFILL constructions.

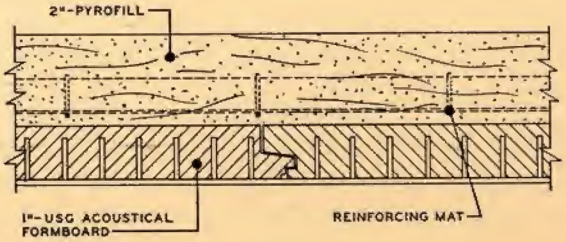
Sub-purlins are spaced 24⅝″ on center, so this closer spacing permits greater loads than the sub-purlin load table indicates on page 9. To determine the load carrying capacity for any sub-purlin shown in this table multiply the tabulated load shown by 1.327. For example, a tabulated load of 35 psf would become 46 psf.

LIMITATIONS OF USE

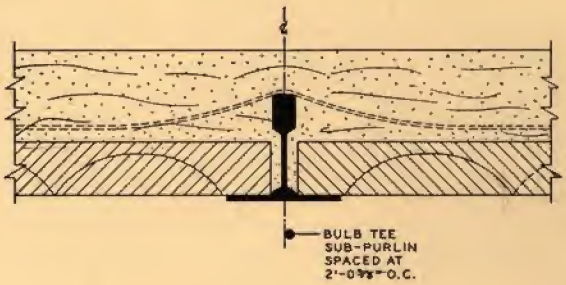
USG Acoustical Formboard, shop painted white, is susceptible to water staining. United States Gypsum cannot assume responsibility for such staining. If staining occurs, the board may be field painted after the slab is dry.

SCALE 3″ = 1′–0″

USG ACOUSTICAL PYROFILL



LONGITUDINAL



TRANSVERSE

USG ACOUSTICAL FORMBOARD SOUND ABSORPTION COEFFICIENTS

Riverbank Laboratories Test No. A52-25

Type	Thickness	Mounting	Coefficients 125	250	500	1000	2000	4000	NRC
Slotted	1″	#4	.18	.37	.56	.77	.83	.74	.65

THERMAL INSULATION VALUES: USG ACOUSTICAL-PYROFILL ROOF DECKS

(Including roofing—supporting steel not included)

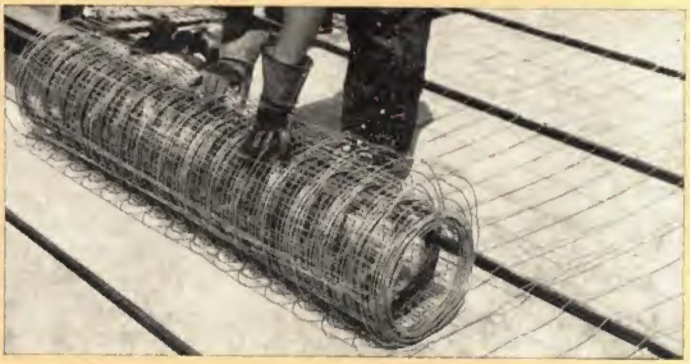
Description of Construction	U Factor
Exposed underside, no added insulation	.20
Exposed underside, plus ½″ roof insulation	.16
Exposed underside, plus 1″ roof insulation	.13

PYROFILL GYPSUM ROOF DECKS

SLAB WEIGHTS AND THERMAL INSULATION VALUES

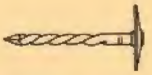
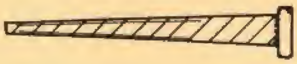
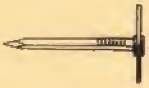
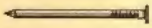
	Approx. Slab Weight per Square Foot	(Btu per sq. ft., per hr., per deg. F. diff. in temperature) "U" Factor for complete roof slab including built-up roof covering (supporting steel not included)		
		No Insulation	½" Insulation	1" Insulation
2½" SHEETROCK PYROFILL ROOF SLAB 2" PYROFILL Over ½" SHEETROCK	10.7	0.38	0.24	0.18
3" PYROFORM PYROFILL ROOF SLAB 2" PYROFILL OVER 1" PYROFORM	10.0	0.16	0.13	0.11
3" U.S.G. INSULATION PYROFILL ROOF SLAB 2" PYROFILL Over 1" U.S.G. INSULATION FORMBOARD	10.1	0.19	0.15	0.12
3" U.S.G. ACOUSTICAL PYROFILL ROOF SLAB 2" PYROFILL Over 1" ACOUSTICAL FORMBOARD	9.9	0.20	0.16	0.13
2½" Asbestos Board PYROFILL ROOF SLAB 2¼" PYROFILL Over ¼" Asbestos Board	12.2	0.39	0.25	0.19

NOTES:
1. For total weight of roof deck add weight of sub-purlins to the approx. slab weights shown above.
2. The component materials weigh approximately: PYROFILL 52 lbs. cu. ft. ½" SHEETROCK 2.05 lbs. sq. ft. PYROFORM 1.3 lbs. sq. ft. 1" U. S. G. Insulation Formboard 1.45 lbs. per sq. ft. (1" U. S. G. ACOUSTICAL FORMBOARD 1.2 lbs. sq. ft.) ¼" Asbestos board 2.44 lbs. per sq. ft.



NAIL HOLDING POWER

Resistance to direct pull in pounds per nail for penetration shown

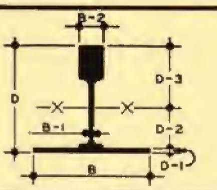
Type of nail		Screw-Tite Squarehed**	La Belle Square Cut Nails (Wheeling)		Gypsum Deck Nails*		Wire Nails
			6-Penny Common	6-Penny Cornice	1½"	1¾"	7-Penny Common
Finish		Plain	Plain or Galv.	Plain or Galv.	Plain	Plain	Plain
Head dimension		1⁵⁄₁₆" square	.27"x.21"	.34"x.28"	dia. .975"	dia. .975"	¼" Round
Shank at head		.125"	.19"x.114"	.23"x.14"	.152"x.103"	.197"x.125"	11.5 Ga.
Shank at point		.125"	.10"x.07"	.13"x.08"	.092"x.071"	.125"x.115"	11.5 Ga.
Details and Lengths							
		1¾"	2"	2"			2¼"
Penetration		1½"	1.75"	1.75"	1.25"	1.50"	2.0"
Holding power	Wet	46.5	26.5	34.0	14.5	28.0	—
in PYROFILL	Dry	62.0	226.0	180.0	116.0	181.0	28.0

NOTES:
1. Values shown are from tests conducted by USG Research Laboratory.
2. Nails were driven by hand with a hammer and withdrawn immediately by means of a weighted lever arm.
3. The dry density of the PYROFILL was approximately 52 pounds per cu. ft.
4. Other nails of the same shank size and penetration should give equal holding power.

* Manufactured by Crescent Brass & Pin Co., Detroit.

** Manufactured by Independent Nail & Packing Co., Bridgewater, Mass.

SUB-PURLIN PROPERTIES AND DIMENSIONS



BULB TEE

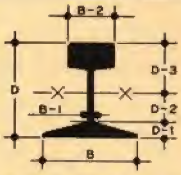
TYPE	Wt. Lbs. Ft.	I in 4	S in 3	B inches	B^1 inches	B^2 inches	D inches	D^1 in.	D^2 in.	D^3 inches
1480 Bulb. T. (B)	1.55	0.146	0.173	1.5000	0.100	0.4375	1.5000	0.100	0.558	0.8420
3158 Bulb. T. (W)	1.50	0.160	0.161	1.4375	0.109+	0.3125	1.6875	0.109	0.582	0.9965
158 Bulb. T. (I)	1.50	0.162	0.165	1.5625	0.109+	0.3750	1.6250	0.109	0.532	0.9840
1680 Bulb. T. (B)	2.00	0.251	0.261	1.6250	0.120	0.5000	1.7500	0.120	0.650	0.9800
168 Bulb. T. (I)	2.00	0.247	0.240	1.6250	0.125	0.4370	1.7500	0.132	0.590	1.0280
3168 Bulb. T. (W)	2.00	0.247	0.240	1.6250	0.125	0.4375	1.7500	0.132	0.590	1.0280
3178 Bulb. T. (W)	2.47	0.397	0.324	2.0000	0.141	0.5000	2.0000	0.141	0.635	1.2240
1780 Bulb. T. (B)	2.40	0.348	0.332	1.8750	0.125	0.5625	1.8750	0.125	0.701	1.0490
178 Bulb. T. (I)	2.50	0.364	0.340	1.9000	0.140	0.5620	1.8750	0.140	0.665	1.0700
200 Bulb. T. (I)	3.00	0.503	0.460	2.0630	0.140	0.6560	2.0000	0.140	0.768	1.0920
2025 Bulb. T. (B)	3.00	0.512	0.464	2.2500	0.125	0.6875	2.0000	0.125	0.897	1.1030
3218 Bulb. T. (W)	3.01	0.561	0.472	2.0625	0.140	0.5940	2.1250	0.140	0.795	1.1900
218 Bulb. T. (I)	3.00	0.598	0.520	2.1250	0.125	0.6875	2.1250	0.140	0.975	1.1500
2180 Bulb. T. (B)	3.05	0.621	0.520	2.2500	0.125	0.7500	2.1250	0.125	0.827	1.1730
214 Bulb. T. (B)	3.20	0.671	0.494	2.3750	0.141	0.6250	2.2500	0.109	0.783	1.3580
2140 Bulb. T. (B)	3.65	0.852	0.738	2.1250	0.125	0.8750	2.3125	0.125	1.032	1.5600
3228 Bulb. T. (W)	3.65	0.852	0.738	2.0000	0.125	0.8750	2.3125	0.125	1.032	1.1560
3258 Bulb. T. (W)	4.67	1.370	1.050	2.2500	0.141	0.9375	2.6250	0.141	1.172	1.3125

(I) Inland Steel Company—38 S. Dearborn St., Chicago 3, Ill.

(B) Buffalo Steel Corp.—Tonawanda, N. Y.

(W) West Virginia Steel & Mfg. Co., Huntington, W. Va.

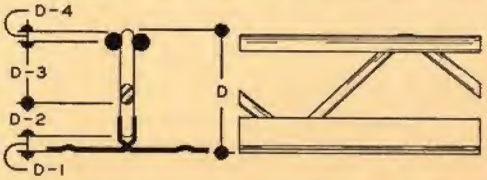
Note: All properties shown are taken from data furnished by manufacturers indicated above.



A.S.C.E..RAIL

TYPE	Wt. Ft.	I in. 4	S in. 3	B Inches	B^1 In.	B^2 Inches	D Inches	D^1 Inches	D^2 Inches	D^3 Inches
12 Lbs. PerYd. (W)	4.00	0.66	0.63	2.0000	—	1.0000	2.0000	0.3438	0.6162	1.0400
16 Lbs. PerYd.(W)(B)	5.33	1.24	1.01	2.3750	—	1.1718	2.3750	0.3750	0.7720	1.2280
20 Lbs. PerYd.(W)(B)	6.67	1.94	1.43	2.6250	—	1.3437	2.6250	0.4375	0.8305	1.3570
25 Lbs. PerYd. (W)	8.33	2.50	1.77	2.7500	—	1.5000	2.7500	0.4844	0.8532	1.4124

TRUSSED TEE (E)



SIZE	I in.^{4}	S BTM	S TOP	D^1	D^2	D^3	D^4	2 Wires in.^{2}	1 Wire in.^{2}	2 Angles in.^{2}
5-9-16 D=1¾"	.1123	.1919	.1057	.1694	.4157	1.0614	.1035	.0672	.0173	.1718
4-5-16 D=2"	.1860	.3054	.1454	.1307	.4779	1.2787	.1127	.0797	.0336	.2135
4-5-16 D=2½"	.3025	.4062	.1841	.1307	.6139	1.6427	.1127	.0797	.0336	.2135
1-5-16 D=2"	.2433	.3155	.2238	.1307	.6406	1.0872	.1415	.1258	.0336	.2135
1-5-16 D=2½"	.3999	.4180	.2853	.1307	.8260	1.4018	.1415	.1258	.0336	.2135
0-5-14 D=2"	.2861	.3833	.2601	.1409	.6057	1.1001	.1533	.1476	.0336	.2681
0-5-14 D=2½"	.4723	.5111	.3320	.1409	.7832	1.4226	.1533	.1476	.0336	.2681

(E) Edge Steel Products, Inc.—Olathe, Kansas

SUB-PURLINS FOR 2-INCH PYROFILL SLABS OVER FORMBOARDS

VALUES SHOWN ARE BASED ON properties determined by each sub-purlin manufacturer. Sub-purlins Spaced 2'8⅝" on Centers, fs @ 20,000 psi, M—1/10 WL except as noted
Exceptions to spacing and slab thickness are noted in the table.

SUB-PURLINS				SAFE TOTAL LOAD in pounds per sq. ft. uniformly distributed for spans of 3'0" to 12'0" in increments of 6 inches																			Maximum Eave Overhang (See Note 10)
TYPE	S in^3	Weight Pounds Lin. Ft.	Weight Pounds Sq. Ft.	3'0"	3'6"	4'0"	4'6"	5'0"	5'6"	6'0"	6'6"	7'0"	7'6"	8'0"	8'6"	9'0"	9'6"	10'0"	10'6"	11'0"	11'6"	12'0"	
1480 Bulb-T (B)	.173	1.55	0.57	117	86	66	52	42	35														2'1"
3158-X Bulb-T (W)	.161	1.45	0.53	110	81	62	49	39	33														2'1"
158 Bulb-T (I)	.165	1.50	0.54	112	83	63	50	40	33														2'1"
168 Bulb-T (I)	.240	2.00	0.74		120	92	73	59	49	41	35	30											2'8"
3168 Bulb-T (W)	.240	2.00	0.74		120	92	73	59	49	41	35	30											2'7"
1680 Bulb-T (B)	.261	2.00	0.74			100	79	64	53	44	37	33											2'8"
3178 Bulb-T (W)	.324	2.47	0.91			124	98	79	66	55	47	41	35	31									2'11"
1780 Bulb-T (B)	.332	2.40	0.88			127	100	81	67	56	48	41	36	31									3'0"
178 Bulb-T (I)	.340	2.50	0.92			130	103	83	69	58	49	43	37	33									3'0"
200 Bulb-T (I)	.460	3.00	1.10				139	113	93	78	67	58	50	44	39	35	31						3'6"
2025 Bulb-T (B)	.464	3.00	1.10					114	94	79	67	58	51	44	39	35	31						3'6"
3218 Bulb-T (W)	.472	3.01	1.11					116	96	80	68	59	51	45	40	36	32						3'7"
214 Bulb-T (B)	.494	3.20	1.18					121	100	84	71	61	53	47	42	37	33	31					3'9"
2180 Bulb-T (B)	.520	3.05	1.12					127	104	88	75	64	56	49	43	39	35	32					3'9"
218 Bulb-T (I)	.520	3.00	1.10						105	89	75	65	57	50	44	39	35	32					3'9"
12-lb. Rail (W)	.630	4.00	1.47						128	107	91	79	69	59	53	*48	*42	*38	*34	*31			4'2"
2140 Bulb-T (B)	.738	3.65	1.33	Spacing 2'9"							101	92	80	70	63	56	50	45	41	37	34	31	4'5"
3228 Bulb-T (W)	.738	3.65	1.33	Spacing 2'9"							106	91	80	70	62	55	50	45	41	37	34	31	4'5"
16-lb. Rail (W) (B)	1.010	5.33	1.94	Spacing 2'9"								125	109	96	85	75	68	61	*55	*49	*45	*42	5'2"
3258 Bulb-T (W)	1.050	4.67	1.69	Min. Thickness = 3" Total—Spacing 2'9"								130	113	99	88	78	71	64	58	53	44	44	5'4"
20-lb. Rail (W) (B)	1.430	6.67	2.42	Min. Thickness = 3" Total—Spacing 2'9"										135	120	107	96	87	79	72	65	58	6'2"
25-lb. Rail (W)	1.770	8.33	3.03	Min. Thickness = 3¼" Total—Spacing 2'9"												132	119	107	97	89	81	75	6'11"

Notes: 1. Loads to left of heavy line have deflections less than 1/360 of span—To Right over 1/360 but less than 1/240 of span. 2. Loads marked * limited by deflection—deflection based on semi continuous spans or $D = \frac{006884wl^4}{EI}$

3. To determine total safe load for Bending Moment of ½ WL use 80% of the tabulated load. 4. To determine total safe load for a maximum fiber stress of 18,000 psi use 90% of tabulated load. 5. For suspended ceilings use loads shown to the left of the heavy line; or 75% of loads shown to right of the heavy line can generally be safely used. 6. The most economical spans are from 6'0" to 8'0"—Values for other sub-purlin spacings can be determined by direct ratio. 7. (I)Inland Steel Co. (B) Buffalo Steel Corp. (W) West Virginia Steel & Mfg. Co. 8. We do not recommend using design loads less than 35 pounds per sq. ft. These are indicated by light type. 9. For values of Acoustical slabs with 24⅝" spacing multiply values shown by 1.327. 10. Values shown are for a total load of 45 pounds per sq. ft. Bending moment "M" = ⅒ WL. Spaced as indicated.

VALUES SHOWN BELOW are on the basis of the Tee, Mesh, and Gypsum acting as a composite section; from data furnished by Edge Steel Products, Inc.

TRUSSED TEES		SAFE TOTAL LOAD in pounds per sq. ft. deflection less than 1/360 of span.*														Maximum Eaves Overhang
Type	Weight Pounds Lin. Ft.	3'0"	3'6"	4'0"	4'6"	5'0"	5'6"	6'0"	6'6"	7'0"	7'6"	8'0"	8'6"	9'0"	9'6"	
5-9-16 D=1¾"	.90		148	113	89	73	60									1'6"
4-5-16 D=2"	1.16					100	82	69	59	51						1'9"
4-5-16 D=2½"	1.16					127	105	88	75	65						1'9"
1-5-16 D=2"	1.32								74	64	56	49				2'0"
1-5-16 D=2½"	1.32								88	78	68	58				2'0"
0-5-14 D=2"	1.57										72	63	56	50	45	2'3"
0-5-14 D=2½"	1.57										80	70	62	56	50	2'3"

Safe load tables are based on uniformly distributed loads on 3 continuous spans and with Sub-Purlins spaced 32¾" O.C.
For Sub-Purlins spaced 24¾" O.C. multiply value by 1.325. The 2½" Trussed-Tee is recommended when formboard of 1" thickness is used.
*For tables showing deflections less than 1/240 consult Edge Steel Products, Inc. Technical Folder.

RECOMMENDATIONS AND LIMITATIONS OF USE

Excessive Moisture or Temperature—PYROFILL roof decks are suitable for all types of buildings and occupancy with normal temperature and humidity conditions. Where intermittent very high temperatures occur, it is advisable to use cement-asbestos board PYROFILL roof decks. Where abnormally high humidity conditions prevail, such as in wet process plants, or where unusually high temperatures prevail such as in foundries, over breechings, in furnace rooms, etc., consult your USG representative for recommendations.

Exposure—During application, PYROFILL roof decks withstand the effects of normal rainfall, snow, freezing and thawing; however, they should be covered as soon as practicable. The water-proof (built-up type) roof covering should be applied as soon as the top surface of the slab is reasonably dry; i.e., when there is no visible moisture gloss. For the application of built-up roof covering, we recommend that the first 2 plies of the felt be nailed. We suggest a 5d or 6d square cut nail through a metal roofing cap. See table of nail holding values on page 8.

Drying—PYROFILL roof slabs dry out from the underside (through the formboard). Adequate heat and ventilation below the slab are required to permit the escape of this moisture. In buildings without windows or with fixed windows adequate mechanical (forced) ventilation is required to remove all construction moisture. PYROFILL is not recommended as a fill over concrete slabs, steel decks, and other decks of low permeability. Consult your USG representative if unusual conditions prevail.

Ventilating of Enclosed Spaces—The underside of a PYROFILL Deck should not be enclosed by a ceiling before the deck is dry. The enclosed space should always be vented to the outside. Such venting by small louvers or openings does not appreciably affect attic temperatures. Please refer to *Heating, Ventilating, Air Conditioning Guide*, published annually by the American Society of Heating and Air Conditioning Engineers for complete information on venting of attic spaces (Chapters 10 & 12).

Acids—Acid fumes generally are not harmful to gypsum although they may be harmful to framing materials. If acid fumes are considered a problem, consult your USG representative.

Heavy Loads—Although the reinforced PYROFILL slab will carry loads in excess of 100 lbs. per sq. ft. with adequate factors of safety, the sub-purlins or bar joists govern the safe load limit. All superimposed concentrated loads, such as flag pole bases, water tanks and ventilating fans, must be directly or indirectly supported on steel framing, not on the gypsum slab.

Steep Roofs—PYROFILL roof slabs are designed to receive built-up roof coverings. On steep roofs, where slate, ceramic tile or rigid type shingle roof coverings are required, the use of USG METAL EDGE GYPSUM PLANK is recommended. See page 8 for PYROFILL nail holding data.

Expansion and Contraction—PYROFILL Roof Decks, like all roof decks, are subject to expansion and contraction due to temperature changes. Bulb tees welded to steel framing limit slab movement that would exert itself at right angles to the direction of the bulb tees. The following is suggested as a guide:

1. Provide expansion joints in the deck and the roofing wherever they are provided in the main structure.
2. Long narrow buildings should have expansion joints through the deck and the supporting structure spaced not more than 200 ft. apart.
3. Separate wings of "L," "U" and "T" shaped buildings with expansion joints.
4. A mineral fiber (PYROFORM) filler strip should be installed between all junctures of roof slabs with parapet walls, stacks, etc. See details on pages 11 and 12.

To enable you to resolve specific problems the coefficient of linear expansion of gypsum concrete is .0000085 inch per °F. See *Steel Construction*, Manual of the A.I.S.C., for method of calculating expansion of bodies by heat.

Decorating—PYROFILL Roof Decks do not generally require further decorating, as the formboards provide a presentable undersurface. When decoration is desired, painting should not be done until the slab is thoroughly dry. Before painting, the slab should be checked for dryness throughout its entire thickness. An electric type moisture meter can be used if contacts are driven well into interior of slab. Casien or Resin emulsion paints give best results. Exposed metal, such as sub purlin flanges, should be protected with a suitable metal primer before finish coats are applied.

All finish coats must be treated to effectively resist mildew.

Suspended Ceilings—Suspended ceilings under PYROFILL roof decks should be hung from the structural steel frame. If they are hung from the roof deck, the hangers should be attached to the sub-purlins, never to the gypsum slab alone. When hung from the sub-purlins, the sub-purlins must be capable of supporting the total weight including ceiling with a deflection not to exceed 1/360 of their span. See selection table on page 9 for load values of various sub-purlins.

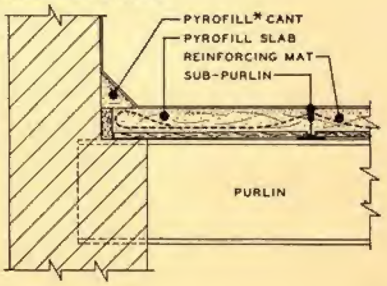
Uplift—During hurricanes or high winds all roof decks are subject to uplift forces. Therefore, roof decks should be anchored to supports to resist this uplift. In developing adequate resistance, the total dead load of the roof deck can be considered as part of the total resistance. In laboratory tests, PYROFILL roof decks, using steel rails or bulb tee sub-purlins welded to the steel framing, have an average uplift resistance equivalent to more than 125 lbs. per sq. ft. Slabs with standard tee or flanged channel (fence post sections) sub-purlins and slabs over bar-joist should have supplemental anchorage to develop the required uplift resistance.

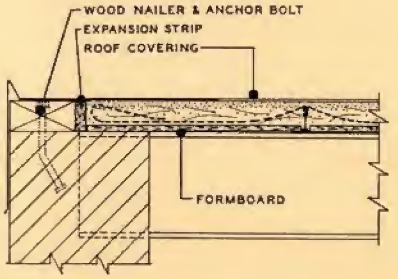
REFERENCE: Armour Research Foundation Test M1068.

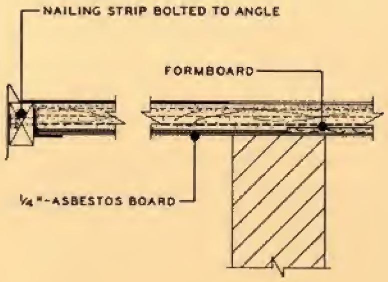
APPLICATION OVER BEAMS AND BAR JOISTS

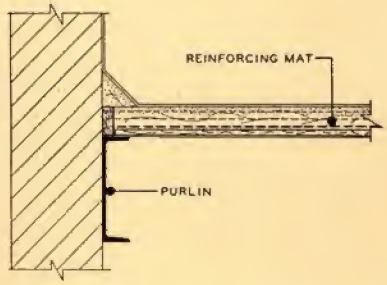
details | **Scale ¾" = 1'-0"**

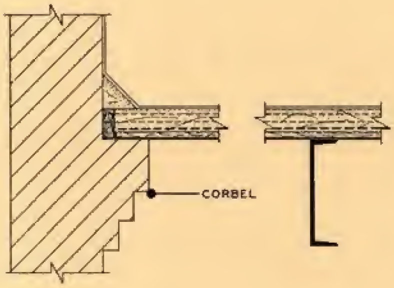
WALL DETAILS

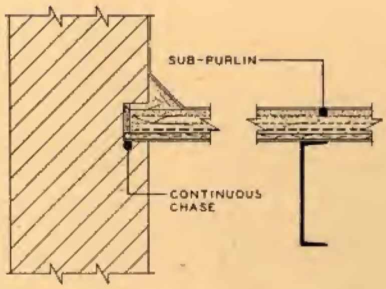




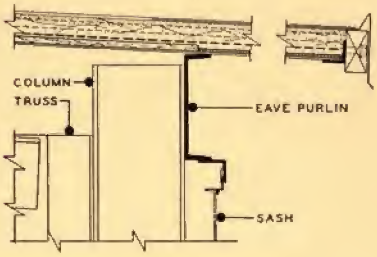


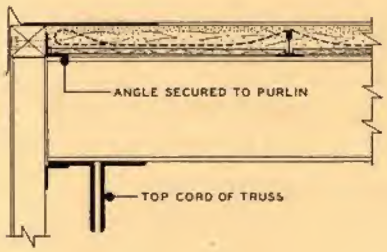


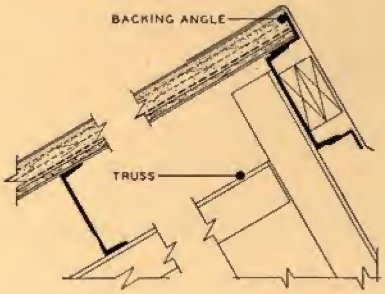




EAVES

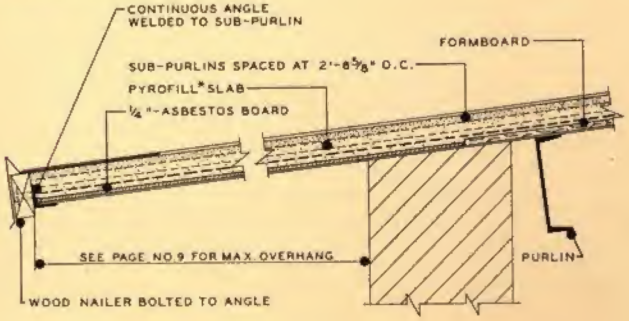


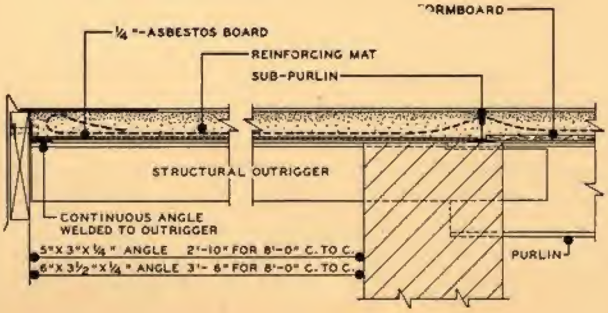




EAVE & GABLE OVERHANG

(OVERHANG BASED ON 45#/□' TOTAL LOAD)


CONTINUOUS ANGLE WELDED TO SUB-PURLIN
FORMBOARD
SUB-PURLINS SPACED AT 2'-8⅝" O.C.
PYROFILL* SLAB
¼"-ASBESTOS BOARD
SEE PAGE NO.9 FOR MAX. OVERHANG
PURLIN
WOOD NAILER BOLTED TO ANGLE

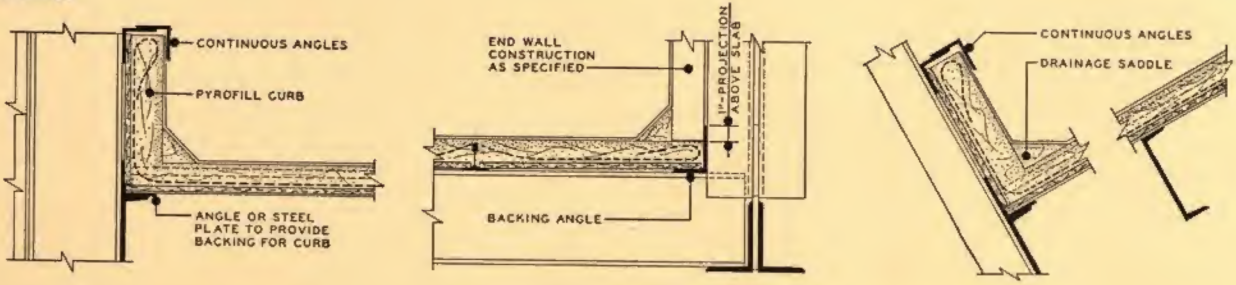

FORMBOARD
¼"-ASBESTOS BOARD
REINFORCING MAT
SUB-PURLIN
STRUCTURAL OUTRIGGER
CONTINUOUS ANGLE WELDED TO OUTRIGGER
5"X3"X¼" ANGLE 2'-10" FOR 8'-0" C. TO C.
6"X3½"X¼" ANGLE 3'- 6" FOR 8'-0" C. TO C.
PURLIN

* T.M. REG. U.S. PAT. OFF.

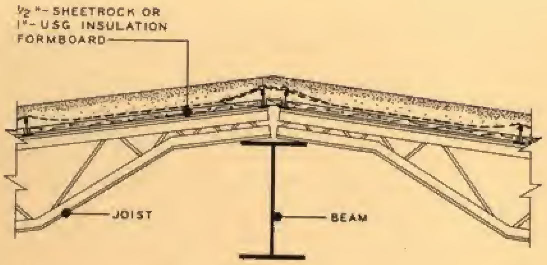
APPLICATION OVER BEAMS AND BAR JOISTS

details | Scale ¾" = 1'-0"

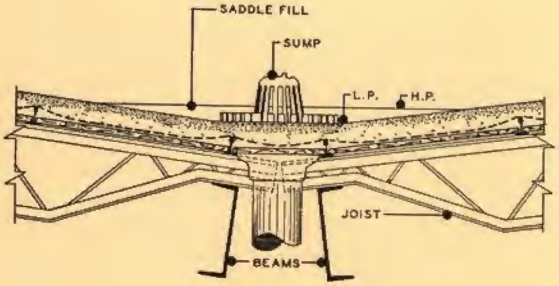
CURBS



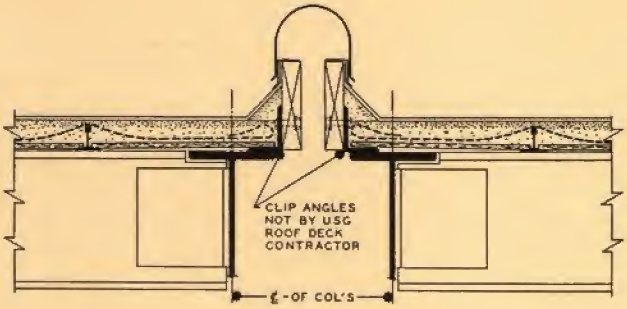
RIDGE DETAIL



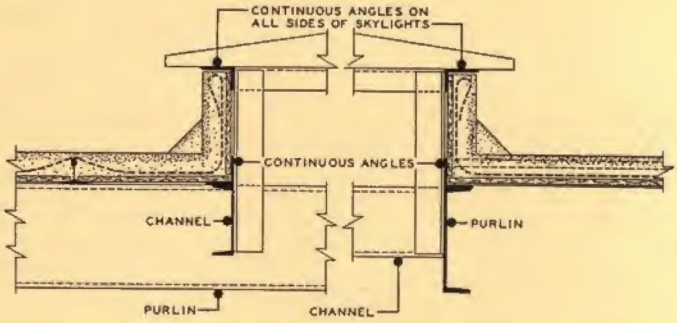
VALLEY DETAIL



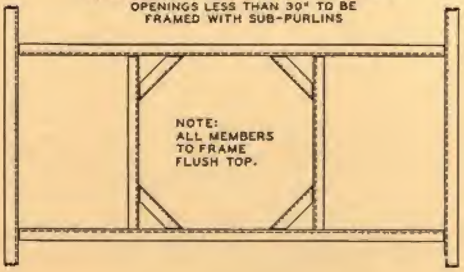
EXPANSION JOINT



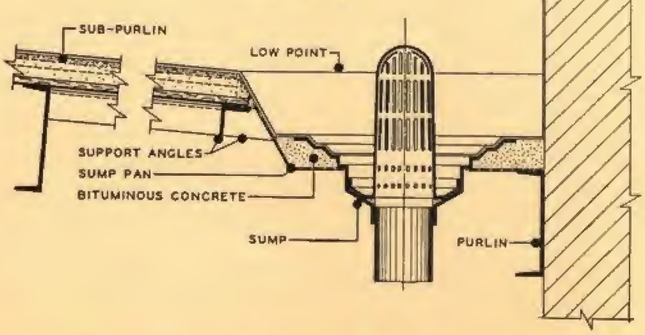
SKYLIGHT DETAIL



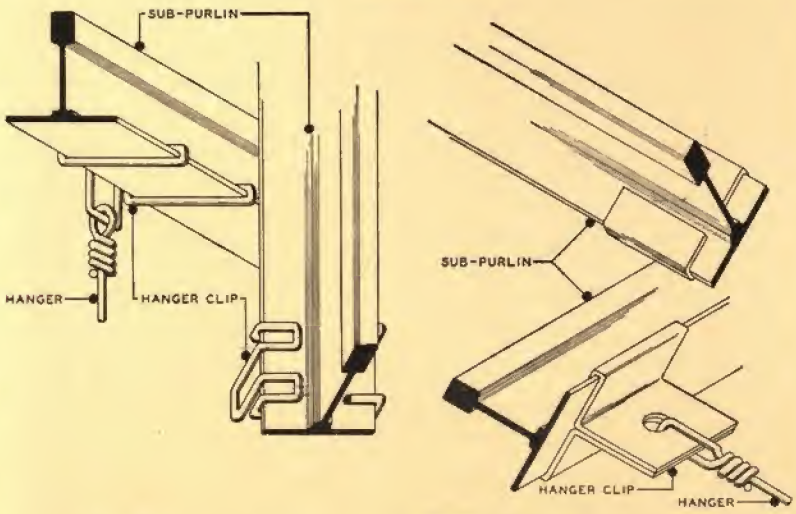
TYPICAL FRAMING AROUND OPENINGS LARGER THAN 30"
OPENINGS LESS THAN 30" TO BE FRAMED WITH SUB-PURLINS

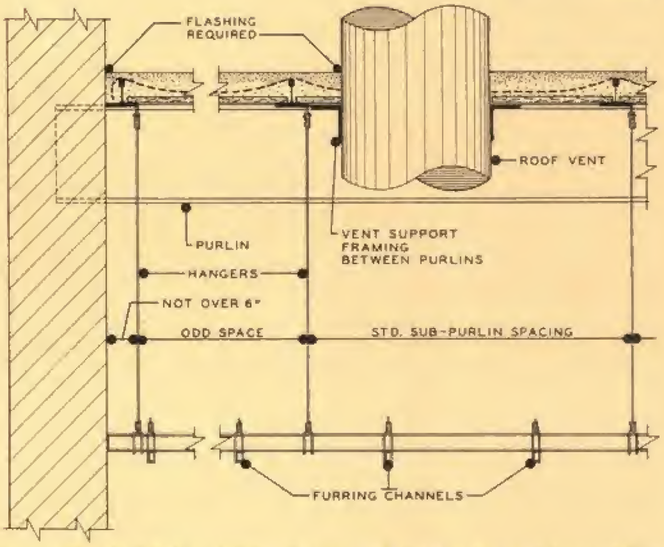


SUMP DETAIL

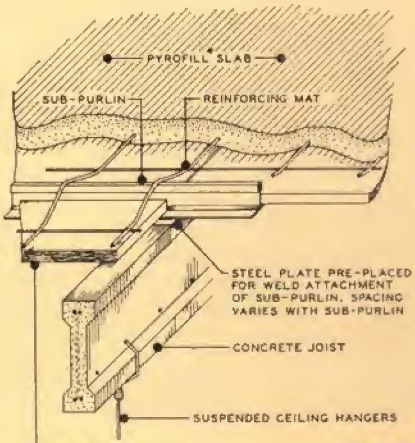


HANGER DETAILS





ATTACHMENTS HANGERS & CHANNEL GRILLAGE NOT BY USG* ROOF DECK CONTRACTOR
SUSPENDED CEILINGS
SCALE—¾"=1'0"


PYROFILL SLAB
SUB-PURLIN
REINFORCING MAT
STEEL PLATE PRE-PLACED FOR WELD ATTACHMENT OF SUB-PURLIN. SPACING VARIES WITH SUB-PURLIN
CONCRETE JOIST
SUSPENDED CEILING HANGERS
FORMBOARD

SPECIFICATIONS

Scope of Work. The contractor shall furnish all labor, material, and equipment and install complete the poured gypsum roof decks, together with cants, curbs, and drainage fills as shown and specified. Approved shop drawings are required before work proceeds.

Materials. 1. Steel Sub-Purlins: Steel sub-purlins shall be an approved type capable of carrying the required dead load and live load, all to be cut to length and shop painted with one coat of an approved paint. All end joints are to bear on roof supports.

2. Formboards: Permanent formboards shall be (select as required):

a. USG ½" treated SHEETROCK formboard 32" wide, (for 48" see page 4: design) in lengths equal to main purlin spacings; provided, however, that where purlin spacings are 10 ft. or greater, formboard shall be one half the length of purlin spaces, with approved galvanized or painted tees to support cross-joints between sub-purlins.

b. PYROFORM Mineral Fiber Formboard (specify type) complete with galvanized or painted sheet metal tees to support end joints where not supported by the roof framing.

c. 1" or ¾" treated USG Insulation Formboard 32" wide, in lengths equal to main purlin spacings.

d. USG Acoustical Formboard, 1" x 12" x 24", for sub-purlins spaced 24⅝" on center.

e. Asbestos cement board ¼" x 32" x 48", complete with approved galvanized or painted sheet metal tees to support end joints where not supported by the roof framing.

3. Reinforcing Mesh: Reinforcement in the poured gypsum slab shall be a galvanized welded wire mesh having 12 gauge longitudinal wires spaced 4" on center, or equivalent type, having an effective cross sectional area of not less than 0.026 sq. in. per foot of slab width.

4. Gypsum Concrete: Gypsum concrete shall be USG PYROFILL consisting of calcined gypsum and not more than 12½ per cent by weight of wood chips, shavings, or fibers.

Installation. 1. Steel Sub-Purlins: Place and weld each sub-purlin to main purlins at each contact point, using fillet welds ½" minimum length placed on alternate sides of sub-purlins where accessible.

2. Formboards: Place formboards on sub-purlin flanges with all end or cross-joints supported, forms to fit neatly on all four edges. Cut forms to fit at walls, curbs, and openings as required.

3. Reinforcement: Place reinforcing mesh with 12 gauge wires at right angles to sub-purlins. Lap mesh ends at least 6 inches. Do not lap sides of mesh. Cut mesh to fit at walls, curbs, and openings, and carry mesh into all areas where PYROFILL is poured.

4. Gypsum concrete: Mix PYROFILL with clean water only, as directed on bags. Pour over formboards to average depth of at least 2 inches. Screed all surfaces to a smooth, even plane ready to receive waterproof roof covering specified in another section. Pour cants, curbs, and drainage fills as shown or required. After pouring, leave roof deck free and clean for other trades.

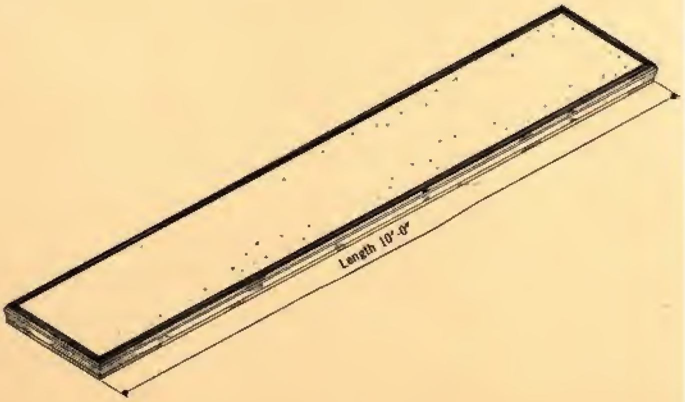
Notes To Architect. Expansion joints should also be provided in the roof deck if they are provided in the main structure.

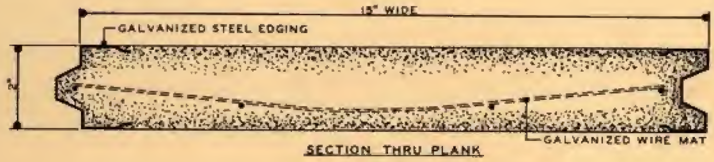
Where resistance to uplift forces is required, the bulb tee, trussed tee, and ASCE type sub-purlins are most effective. Other types may require supplementary anchorage.

Where suspended ceilings are required, USG recommends that they be hung from the main purlins wherever economically feasible. If they are hung to the roof deck, the hangers should be attached to the sub-purlins, never to the gypsum slab itself. Added weight of suspended ceiling affects sub-purlin size.

*T.M. Reg. U.S. Pat. Off.

METAL EDGE GYPSUM ROOF PLANK





SECTION THRU PLANK

UPLIFT

Laboratory tests show Standard Attachment Clips will support loads up to 2100 pounds with failure by shear of the 4d nail attachment.

NAIL HOLDING POWER OF GYPSUM

Description of Nail	Holding Power of dry slab. Penetration ¼" less than nail length. Lbs. per Nail
1 ¾" LaBelle Square Cut	150 lbs.
1 ½" Galvanized Roofing Nail	25 lbs.
1 ¾" Independent Screw-Tite Squarehed	46 lbs.

THERMAL INSULATION VALUES

"U" Factor for complete roof slab including built-up roof covering (Btu per sq. ft., per hr., per deg. F. diff. in temperature)

Plank without added insulation—0.51 Btu
Plank with ½" added insulation—0.30 Btu
Plank with 1" added insulation—0.21 Btu

Note: The insulation considered is a rigid type wood fiber board with a "k" factor of .36

DESCRIPTION

USG Metal Edge Gypsum Plank is a precast structural roof deck unit 2 inches thick, 15 inches wide, and 10 feet long which weighs 10.5 pounds per square foot. Reinforced with 22 gauge galvanized steel tongue and groove edges and a 16 gauge galvanized wire mat, the unit is designed to span a maximum of 7 feet under normal design roof loads.

FUNCTION AND UTILITY

Interlocking Tongue and Groove. The accurately formed interlocking edges mate with adjacent plank, distributing the load. This design permits plank ends to occur off supports, and uniform spacing of roof purlins is therefore unnecessary.

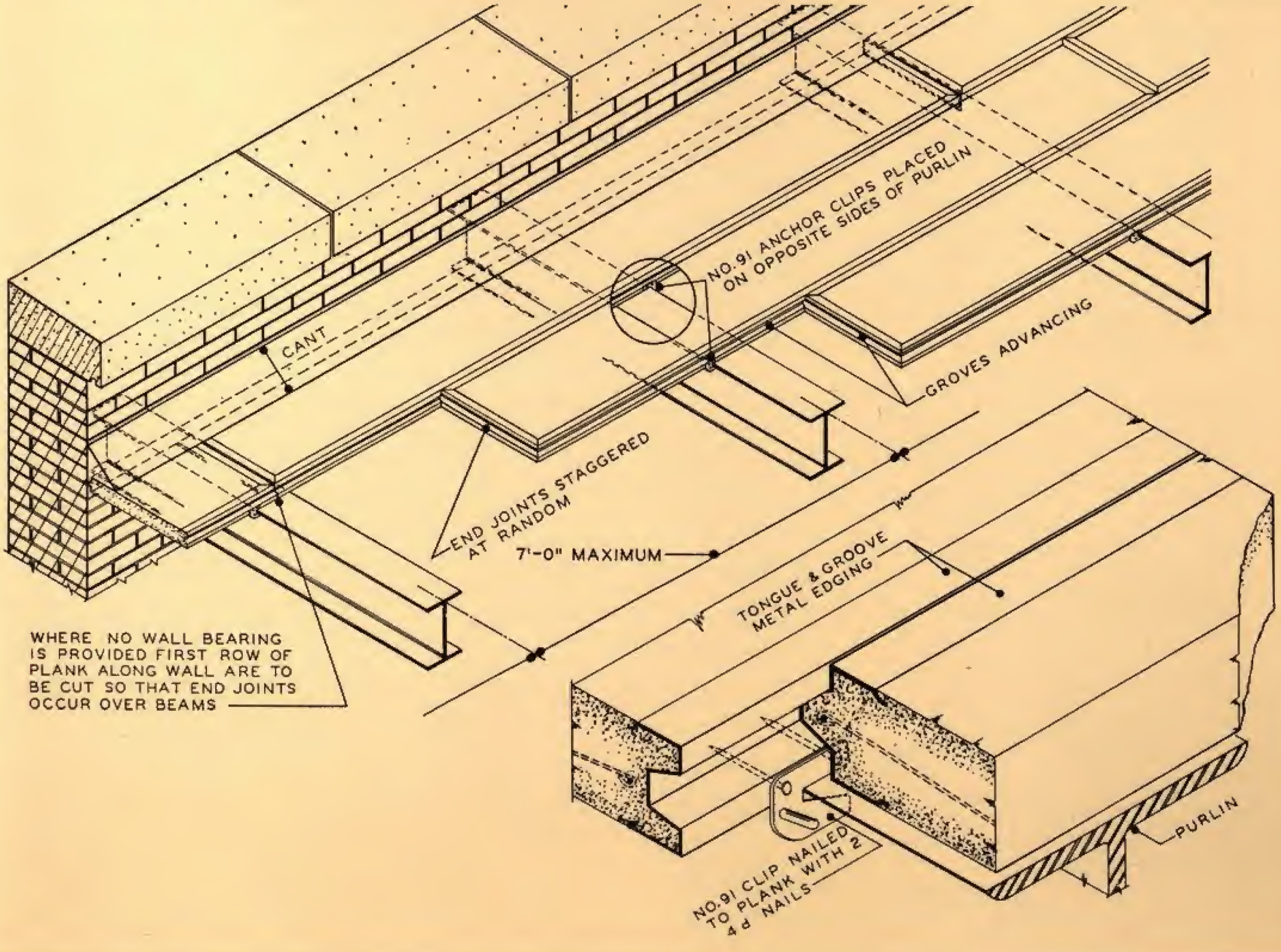
Ease of Erection. The large size and interlocking edges permit easy, fast construction.

Winter Construction. Because the units are precast and laid without grout, winter delays are avoided.

Nailable—The dense gypsum provides good nail holding power. See data table on this page.

Strength. The unit has been tested to loads exceeding 200 pounds per square foot on a 6'-8" span. Conforms to Federal Specification SS-S—439 and ASTM C377-56T.

Adaptability. USG Metal Edge Plank can be used on flat, pitched, and curved roofs, provided the radius of the curve exceeds 150 feet.


NO.91 ANCHOR CLIPS PLACED ON OPPOSITE SIDES OF PURLIN
CANT
GROVES ADVANCING
END JOINTS STAGGERED AT RANDOM
7'-0" MAXIMUM
TONGUE & GROOVE METAL EDGING
WHERE NO WALL BEARING IS PROVIDED FIRST ROW OF PLANK ALONG WALL ARE TO BE CUT SO THAT END JOINTS OCCUR OVER BEAMS
NO.91 CLIP NAILED TO PLANK WITH 2 4d NAILS
PURLIN

RECOMMENDATIONS . . . LIMITATIONS OF USE

Job Protection. During job storage, gypsum plank should be protected from exposure to rain and snow. Handle and store on edge. Use temporary wood planking over gypsum plank areas exposed to repetitive impact or wheel loads during construction.

Roof Covering. Apply built-up roof covering in accordance with roofing manufacturers' specifications as soon as possible after installation of gypsum plank. The recommended application of roofing to Metal Edge Gypsum Plank is by nailing the first sheet dry using nails providing a minimum penetration of 1¼" (no more than 1½") into the slab. If roofing is mopped on precautions should be taken to prevent leakage of pitch or asphalt through joints in the plank. Apply asphalt, asbestos or light slate shingles in accordance with manufacturers recommendations.

A 15 lb. felt underlayment is recommended.

Excessive Moisture. Gypsum plank roofs are practical for all buildings having normal humidity conditions. Whenever continuous high humidity is anticipated, such as in wet process plants, consult the nearest USG Sales Office for recommendations.

High Temperature. Gypsum plank for roofs or floors perform satisfactorily on buildings exposing them to normal or moderately high temperatures. Where unusually high temperatures are expected, such as in foundries, furnace rooms, over breechings, etc., consult the nearest USG Sales Office for recommendations.

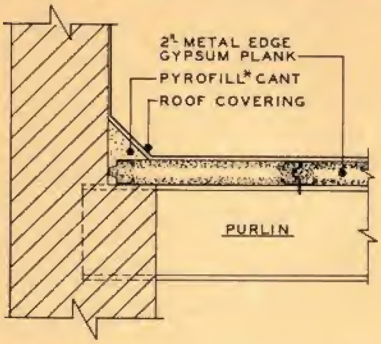
Steep Roofs. Gypsum plank can be used satisfactorily on steeply pitched roofs if precautions are taken to prevent thrust accumulation. See "f" under "erection".

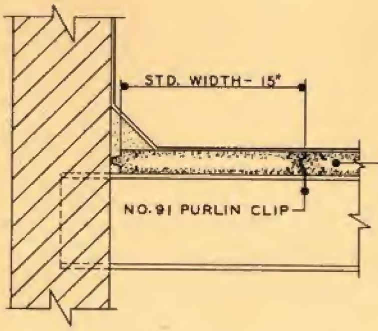
Venting of Enclosed Spaces. All enclosed spaces beneath roof decks should be adequately vented to the outside. Such venting by small louvers or openings does not appreciably affect attic temperatures. Please refer to *Heating, Ventilating, Air Conditioning Guide,* published annually by the American Society of Heating and Air Conditioning Engineers for complete information on venting of attic spaces (Chapters 10 and 12).

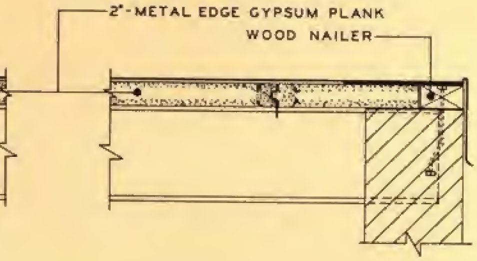
METAL EDGE GYPSUM ROOF PLANK

PARAPET & END WALL DETAILS

SCALE: 3/4" = 1'-0"

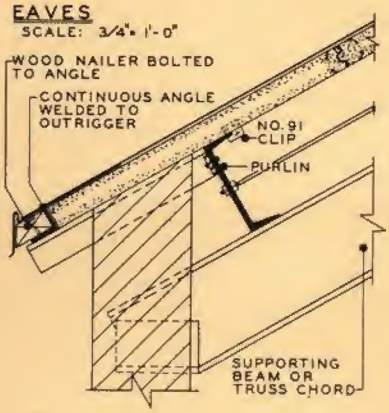


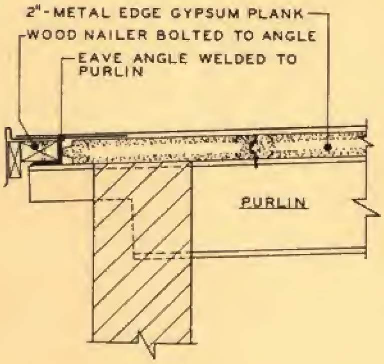


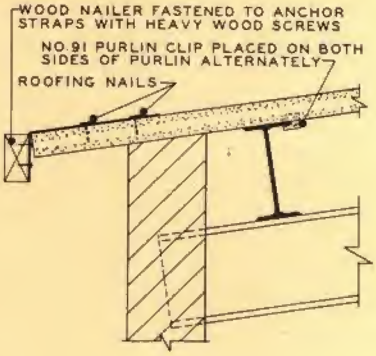


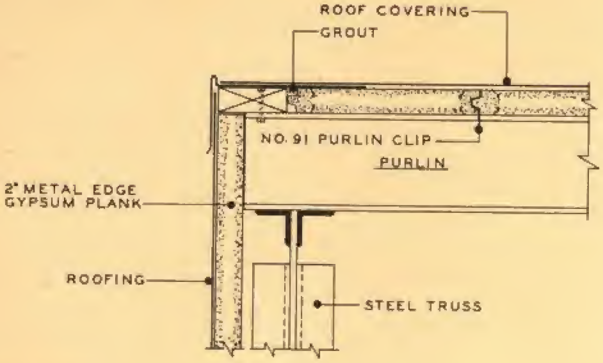
EAVES

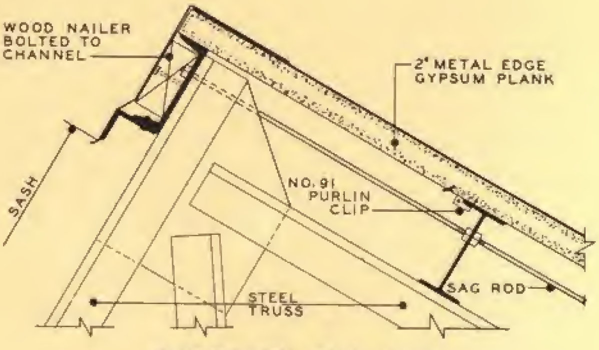
SCALE: 3/4" = 1'-0"


WOOD NAILER BOLTED TO ANGLE
CONTINUOUS ANGLE WELDED TO OUTRIGGER
NO. 91 CLIP
PURLIN
SUPPORTING BEAM OR TRUSS CHORD


2" - METAL EDGE GYPSUM PLANK
WOOD NAILER BOLTED TO ANGLE
EAVE ANGLE WELDED TO PURLIN
PURLIN


WOOD NAILER FASTENED TO ANCHOR STRAPS WITH HEAVY WOOD SCREWS
NO. 91 PURLIN CLIP PLACED ON BOTH SIDES OF PURLIN ALTERNATELY
ROOFING NAILS

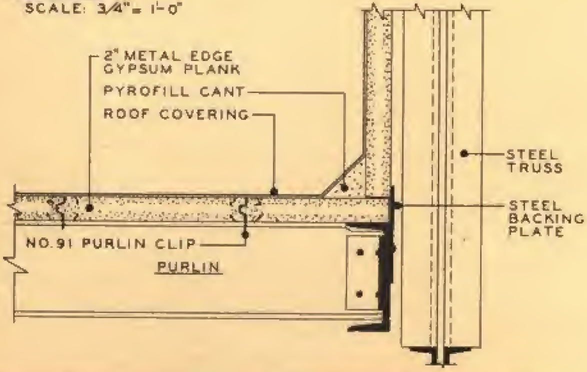


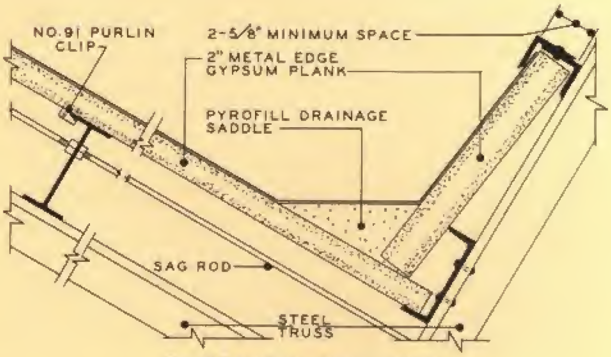


SAWTOOTH SKYLIGHT

CURBS

SCALE: 3/4" = 1'-0"





SAWTOOTH SKYLIGHT

SPECIFICATIONS

Scope. Unless otherwise shown on plans, all roof areas shall be covered with gypsum plank, and all curbs, cants, saddles, etc., shall be as shown or specified herein.

Materials. *Gypsum plank* shall be 2″ x 15″ x 10′0″ metal edge gypsum plank, manufactured by United States Gypsum Company.

Clips and nails. The manufacturer of the gypsum plank shall furnish standard galvanized clips for attachment to main purlins, (200 clips per 1000 sq. ft.). Nails (2 per clip) shall be 4d galvanized slaters or 1″ smooth shank No. 11 ga. galvanized roofing nails.

Cants and saddles shall be formed of PYROFILL* gypsum fiber concrete manufactured by United States Gypsum Company.

ERECTION

Placing of Plank. Start laying plank at one corner of each independent area.

All plank shall be laid dry with marked side up and with the GROOVE side advancing. Plank shall be placed on supporting steel with joints tightly interlocked.

Where no wall supports are provided along the longitudinal edge of the starting and final rows of plank, plank in these rows shall be cut so that end joints occur over roof supports. (When supports are provided along the wall, end joints may occur off the supports.)

End joints in adjacent rows shall be staggered not less than 30 inches. Alternate rows shall be started with full units or cut pieces long enough to have bearing at not less than two supports. End of rows shall be finished similarly. The remaining rows can be started (or finished) with cut plank long enough to have not less than one support. Cut plank to fit at walls, ridges, valleys and around openings as indicated or required.

Anchorage of Plank To Supports. Each plank shall be anchored to supporting members by the following method:

a. Steel Purlins—Use one galvanized clip at every point of support. Where possible, alternate position of clips so that each clip is facing in opposite direction to the next one. Secure each clip to plank with 2 nails.

b. Steel Purlins—Weld metal edging of plank to supports by flowing weld from the support to the plank edging being careful not to burn holes in the edging.

c. Other Type Purlins—Where clip or weld cannot be used we suggest driving nails through the metal edging on both sides of the purlin and using a wire looped from nail to nail for anchor to the purlin.

d. Concrete Joists—Use power driven studs fired through the plank, 2 studs per plank at each intersection, with penetration into the joist adequate for secure attachment. If steel plates are imbedded in concrete joists use method in (b) above.

e. Wood Joists—Use two 16 penny nails at each intersection of plank with purlin. Drive nails so that their heads are flush with the top surface of the plank.

f. Slopes over 30° on steel framing—Bolt plank to purlins using one bolt per plank at each intersection with a purlin. Bolt directly through the purlin or through a clip fixed to the underside. Bolt heads should be flush with the top of the plank.

SPECIAL FORMING

Ridges and Hips. Fill joints at ridges and hips with mortar consisting of USG Gypsum Grouting Cement and sand mixed in the proportion of 1 part cement to 2 parts clean sharp sand by volume.

Cants and Drainage Fills. All curbs, cants, drainage saddles, etc., shall be installed as indicated or required using PYROFILL Gypsum Fiber Cement mixed with clean water only in the proportion of 8 gallons of water to each 80 lb. bag of PYROFILL.

Painting. Plank must be dry before painting with sealing type oil or latex base paints. Galvanized edging must be freed from grease or oil by cleaning with mineral spirits or a similar solvent.

Edging can be painted with a zinc dust metal primer of the type meeting Federal Specification TTP—641—b, dated 1-23-53, Type II.

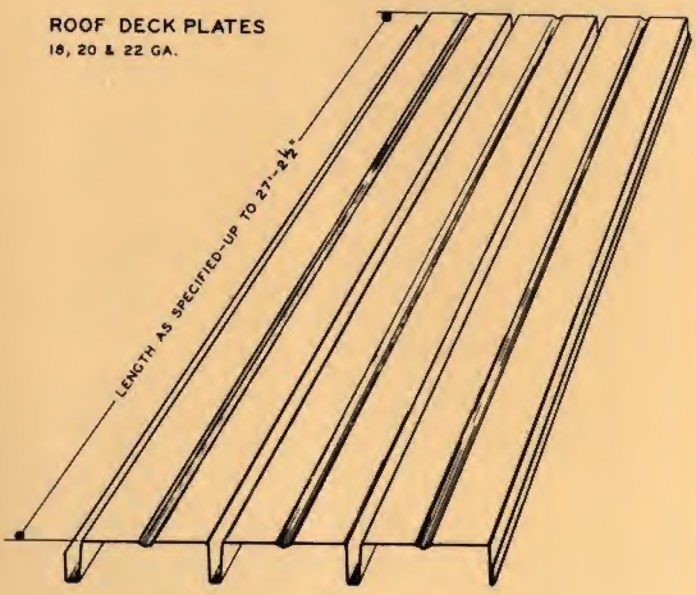
Seal gypsum surfaces with TEXOLITE* Vinyl Sealer or SHEETROCK* Sealer.

Allow metal primer and Sealer to dry. Apply one or two coats of USG DURAVAL* or equal latex paint, oil paint, or alkyd flat paint. If it is necessary to paint before plank is dry, prime metal edging as above. Paint edging and gypsum with USG TEXOLITE* Standard or equal casein paint which has been reinforced by additional fungicide such as 1¼ oz. Dowicide "G" per gallon of paste.

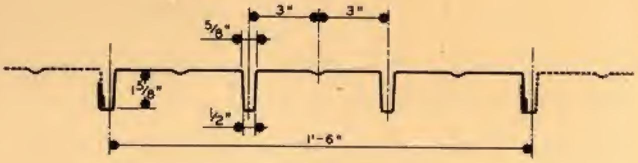
*T.M. Reg. U.S.Pat. Off

USG
STEEL ROOF DECK

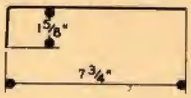
ROOF DECK PLATES
18, 20 & 22 GA.



STANDARD STEEL ROOF DECK PLATE



TYPICAL CROSS SECTION THRU ROOF DECK PLATE



FILLER PLATE

DESCRIPTION

USG Steel Roof Decks are prefabricated units, formed by cold rolling low carbon steel sheets into ribbed type interlocking panels, ready for installation as they come to the job. USG Steel Roof Deck, ribbed panels, are made 18 inches wide, with nominally 1½" deep ribs, and in standard lengths from 5'8" to 27'2½" inclusive. Each roof deck panel is shop painted light-toned gray by flow coating with a rust inhibitive zinc chromate paint oven dried.

USG Steel Roof Deck panels are available in No. 18, No. 20 or No. 22 U. S. Standard gauges shop painted or galvanized.

All essential accessories such as ridge and valley plates, cover plates, cants, curbs, sump pans or plates are also available in the same shop painted or galvanized steel as shown in detailed drawings.

USG Steel Roof Deck is manufactured in accordance with the Standards and Specifications of the Metal Roof Deck Technical Institute.

FUNCTION AND UTILITY

Light Weight: USG No. 18 gauge painted steel roof deck, ribbed panels, weigh approximately 315 pounds per 100 sq. ft. of roof area, No. 20 gauge approximately 235 pounds, and No. 22 gauge approximately 200 pounds—galvanized slightly more. This light dead load permits savings in the structural steel framing.

Strength: All of the high strength of steel is used to advantage in the ribbed design of USG Steel Roof Decks. A stiffening bead is formed in the top flange between the ribs to resist warping or buckling under concentrated loads.

A table of safe total loads in pounds per sq. ft., the weight per square, the moment of inertia (I''^4), the section modulus (S''^3) and the insulation values, "U" for the complete roof including built up roof covering, is shown in the Technical Data at the bottom of this page.

Fire Resistance: USG Steel Roof Decks cannot burn or otherwise support combustion. For fire resistance ratings, see page three.

Permanent: USG Steel Roof Decks are prime coated with a toned gray rust inhibitive, oven dried paint. Proper job painting and maintenance will give this deck a normal life expectancy equal to the life of the building. (Galvanized deck is supplied unpainted.)

Adaptability: USG Steel Roof Decks are ideal on flat, warped and low pitched roofs. Insulation and built-up roof coverings are required.

Appearance: The painted surfaces of the deck plates and accessories, and the repeating rib pattern can provide a pleasing light reflective undersurface.

Maintenance: The shop painted surfaces can be washed or re-painted as maintenance requires.

Low Cost: Material costs are low. Speed of erection results in low labor costs. Light dead load conserves structural steel.

LIMITATIONS OF USE

Insulation: A rigid type of insulation is required over steel roof decks under the built-up roof covering.

Acid Fumes, Excessive Temperature and Moisture Conditions: Special consideration must be given before using steel roof decks when they are exposed to:

1. Acid or acid fumes detrimental to paint or steel.
2. Excessive temperature.
3. Excessive moisture or humidity conditions.

For further information consult our nearest Industrial Sales Engineer or Architect Service Representative.

Venting of Enclosed Spaces: All enclosed spaces beneath roof decks should be adequately vented to the outside. Such venting by small louvers or openings does not appreciably effect attic temperatures. Please refer to *Heating, Ventilating, Air Conditioning Guide*, published annually by the American Society of Heating and Air Conditioning Engineers for information on venting of attic spaces. (Chapters 10 & 12).

Cantilever for Rakes and Eaves: Where maximum unsupported overhang for USG Steel Roof Deck exceeds 18", consult the nearest U.S.G. Sales Office for recommendations.

TECHNICAL DATA

Type of Span	Ga.	SAFE TOTAL LOADS IN LBS. PER SQ. FT. — PURLIN SPACING 5′0″	5′6″	6′0″	6′6″	7′0″	7′6″	8′0″	8′6″	9′0″
Continuous	18	138	114	96	82	70	61	54	48	42
	20	102	84	71	60	52	45	40	35	31
	22	86	71	60	51	44	38	34	30	—
Two Spans	18	111	91	77	65	56	49	43	38	34
	20	82	67	57	48	42	36	32	28	25
	22	69	57	48	41	35	30	—	—	—
Simple	18	111	91	77	65	56	49	41	35	31
	20	82	67	57	48	42	36	31	26	23
	22	69	57	48	41	35	30	—	—	—

PROPERTIES

Type	Wt. Lbs. Per Sq. Black	Galv.	1″^{4}	5″^{3}
18 ga.	315	345	.277	.230
20 ga.	235	265	.195	.170
22 ga.	200	225	.156	.143

Insulation—"U" Value

Btu/hr./s′f/°F Diff.—INCLUDING ROOFING

None	½″†	1″†	1½″†
0.94	0.39	0.24	0.18

†Fiberboard Insul—K = .33 over steel deck

NOTE: None of these loads will produce a stress greater than 18,000 psi or a deflection due to live load greater than 1/240 of the span. A 6 psf dead load representing the weight of the deck, insulation, roofing, etc., was subtracted from total loads when determining deflections. In accordance with specifications of the Metal Roof Deck Technical Institute:

(a) Only ¾ of the width of the top compression flange for 18 gauge, and ⅝ for 20 gauge have been used as being effective in resisting bending.
(b) A moment coefficient of 1/10 has been used for 3 or more spans, and ⅛ for two spans and simple span.
(c) A deflection coefficient of 3/384 has been used for all except simple spans, and 5/384 for simple spans.

FIRE-RESISTANCE RATINGS—STEEL ROOF DECK CONSTRUCTION

Roof Materials Applied Over Steel Roof Deck	Suspended Ceilings of Metal Lath & Plaster	Rire Resistance Ratings	Authority
(a) 2″ Vermiculite concrete (or equivalent)	1″ Vermiculite—gypsum plaster on metal or wire lath	4 hrs.	National Bureau Standards Test No. 60, 1/31/49 Report No. TR 10235-2FP 2688
(b) Minimum 1¾″ insulation board of shredded wood, bonded with portland cement	1″ Vermiculite—gypsum plaster on metal or wire lath	3½ hrs.	
(c) Minimum 1″ insulation as described in item (b) above	1″ Vermiculite—gypsum plaster on metal or wire lath	3 hrs.	
(d) Minimum 1″ insulation board of felted glass fiber	1″ Vermiculite—gypsum plaster on metal or wire lath	2 hrs.	
(e) Minimum 1½″ wood fiber board insulation	1″ sanded gypsum plaster 1:2 mix	2 hrs.	N.B.S. Test No. 58 11/29/46
(f) Minimum 1½″ wood fiber and cement binder insulation	⅞″ sanded gypsum plaster 1:2 mix	2 hrs.	N.B.S. Test No. 56 11/27/45
(g) Minimum 1″ wood fiber board insulation	¾″ sanded gypsum plaster 1:2, 1:3 mix	1½ hrs.	N.B.S. Test No. 57 1/15/46

ARCHITECTURAL SPECIFICATIONS

General—All principal roof framing, including trusses, purlins, beams, framing around openings larger than 12″ in diameter, and all trimming at curbs, sills, and walls, will be done by others. See Specifications for Structural Steel.

SCOPE

Unless otherwise specified, all roof areas are to be covered with USG Steel Roof Deck. All deck is to be left complete, ready for application of the roof insulation and built-up roofing.

MATERIALS

Roof Deck Plates—Shall be of (No. 18) (No. 20) (No. 22) gauge steel having nominal 1½″ deep ribs, 6″ on centers, and made in units 18″ wide by lengths to fit purlin spaces and shall be manufactured by United States Gypsum Company.

Accessories—All cant strips, ridge and valley plates, utility angles and cover plates, etc., as indicated, shall be 20 gauge steel fabricated to sizes and shapes indicated and shall be manufactured by United States Gypsum Company.

Curbs—Shall be of (No. 18) (No. 20) (No. 22) gauge steel (Roof Deck Plates) (Sheets formed to sizes and shapes indicated).

Optional—Sump Plates where indicated shall be fabricated of 14 gauge steel sheets according to manufacturers' standards.

Paint—All USG Steel Roof Deck plates and sheet metal accessories, etc., are to have one shop coat of rust inhibitive zinc chromate paint, applied at the factory and oven dried to protect the steel during shipment.

ERECTION

All USG Steel Roof Deck plates and accessories are to be installed by welding in accordance with directions and placing diagrams furnished by the manufacturer, or steel deck contractor.

Optional—For use of clips in lieu of welding:

All USG Steel Roof Deck plates and accessories shall be installed with clips in accordance with directions and placing diagrams furnished by the manufacturer, or steel deck contractor.

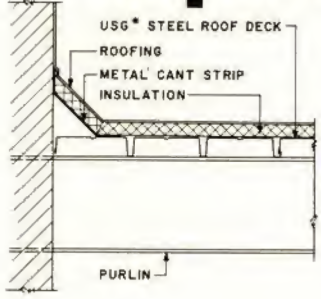
Notes to Architect:

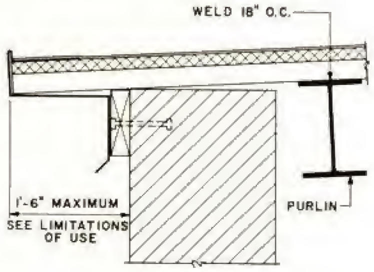
1. When USG Steel Roof Deck is installed by welding, it may also be advisable to use spacer wedges. When pitch of roof is 3″ in 12″ or greater, anchorage clips for insulation are recommended.

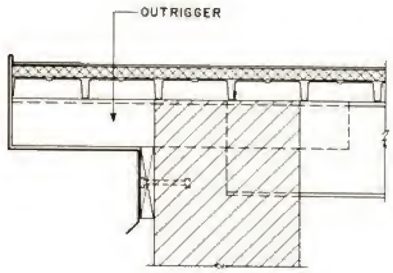
2. Galvanized steel decks (unpainted) No. 18, 20, or 22 gauge are available on specification.

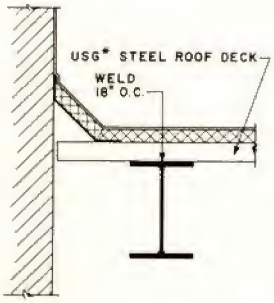
USG
STEEL ROOF DECK

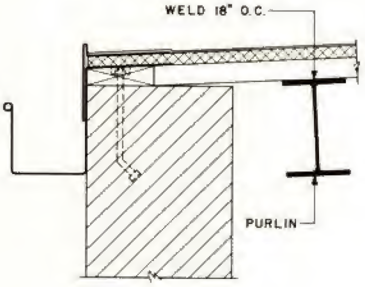
WALL DETAILS Scale 3/4" = 1'-0"

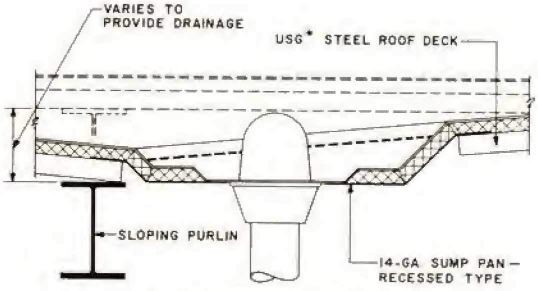








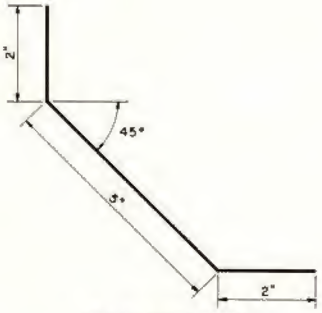




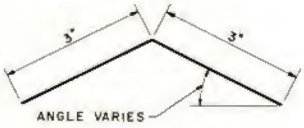
ROOF SUMP DETAIL

ACCESSORIES

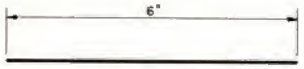
MAX. FAB. LENGTH 10'-0"



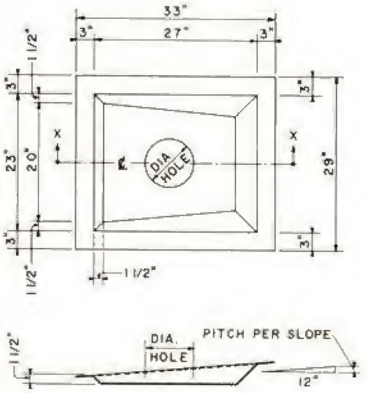
METAL CANT STRIP
20-GA.



RIDGE OR VALLEY PLATE
20-GA.



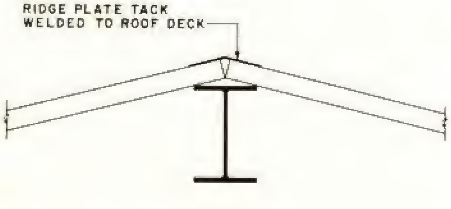
COVER PLATE
20-GA.



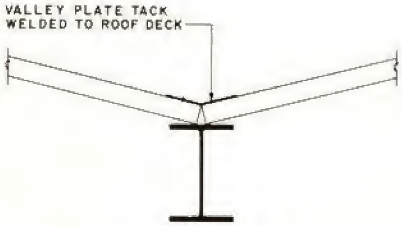
SECTION-XX

SUMP PAN-RECESS TYPE
14-GA.

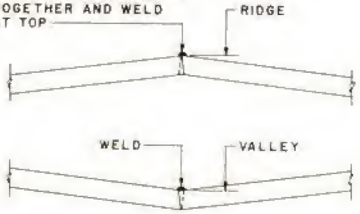
MISCELLANEOUS DETAILS



RIDGE DETAIL



VALLEY DETAIL



RIDGE & VALLEY DETAILS
WHERE SLOPE IS LESS THAN 1" PER 1'-0"

*T.M. Reg. U.S. Pat. Off.

A.I.A. File 21-A

TECHNICAL INFORMATION

USG® GYPSUM PLASTERS

AND FINISHING LIMES

UNITED STATES GYPSUM

1960

A.I.A. File 21-A

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BASECOAT PLASTERS

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A. BASECOATS

Correct selection and application of U. S. Gypsum basecoat plasters over a properly prepared standard plaster base such as PYROBAR* gypsum tile, clay tile, concrete masonry units, ROCKLATH* plaster base, metal lath, or monolithic concrete, assures good basecoat plaster adhesion.

USG Gypsum Basecoat Plasters are formulated to set and dry properly under recommended job conditions as covered in the specifications.

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RED TOP STRUCTO-LITE* Gypsum Plaster 5
BONDCRETE* Plaster 5
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Technical Data—Finish Plasters 6
Exterior Stucco Basecoat 6
Fire Test Data 7
Technical Data—Basecoat Plasters 7

B. FINISHING COATS

Finish coat plaster provides the base for final decoration. It is applied to a thickness of from 1/16 in. to 1/8 in., usually over a gypsum plaster basecoat. There are several types of finish coats, each formulated to serve specific requirements and generally classified according to their principal ingredients.

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GYPSUM PLASTERS

DESCRIPTION

The base of all gypsum plasters is gypsum rock or hydrous calcium sulfate which has a water content of about 20% in chemical combination. During manufacture, 3/4 of this water is removed. When water is added at the job, the material crystallizes (sets), reverting to its original chemical form.

RED TOP gypsum plasters are specifically formulated to control setting time and other important characteristics. This depends upon the intended method of application, the climatic conditions of the area in which they will be used, and their intended use.

USG basecoat plasters can be applied by using either hand or machine methods, on gypsum and metal lath; gypsum, clay, or concrete tile; concrete or cinder blocks, monolithic concrete; brick, or other approved plaster bases.

FUNCTION AND UTILITY

Plaster has the capability of conforming to any design, and provides the ultimate in durable wall and ceiling surfaces. Since plaster fulfills other important functions in a building as well, selection of the proper basecoat plaster is influenced by the relative importance of several design requirements, including those outlined below.

Location. Gypsum plasters should be selected for use in areas which are not subject to excessive moisture conditions. (See Limitations of Use on pages 4 and 5).

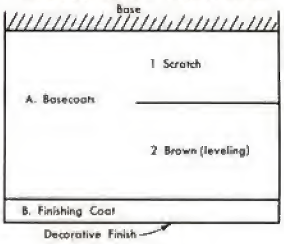
Intended Use. A number of basecoat and finish coat materials specifically designed to withstand maximum abuse are described herein, and should be specified for use when these characteristics are required.

Fire Protection. Gypsum basecoat plasters, properly proportioned with approved aggregates, provide excellent fire protection. (See page 7 for Technical Data on Fire Ratings).

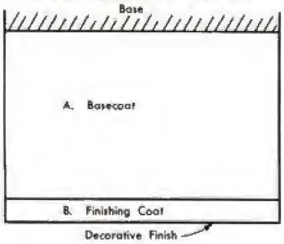
Strength. There are significant differences in strengths of gypsum basecoats. Strength depends upon the type of plaster used, the type and proportion of aggregate used with the plaster, as well as job conditions. (See Technical Data on page 7).

Sound Insulation. Gypsum plasters in combination with specially designed systems, offer sound transmission loss characteristics suitable for most all requirements. Sanded basecoat plasters provide optimum results.

THREE COAT PLASTER



TWO COAT PLASTER



*T.M. Reg. U.S. Pat. Off.

BASECOAT PLASTERS

PLASTER AGGREGATES For Basecoats

Sand, or either of the lightweight aggregates, perlite and vermiculite, may be used in most applications. All must comply with the requirements of ASTM Designation C-35.

SAND

Sand is most commonly used because of its lower cost and ready availability in most areas. Of all aggregates, it generally provides the greatest strength, hardness, and sound insulation, when correctly proportioned with gypsum cement plaster as shown in the table below.

LIGHTWEIGHT AGGREGATES

Lightweight aggregates, perlite and vermiculite, are often used because of their ease of handling in inclement weather and cold weather, reduced dead load, and excellent fire protection qualities.

However, lightweight aggregate plasters have certain limitations. Their compressive and tensile strengths are generally lower than strengths obtained with equally proportioned sanded plaster. (See Technical Data on page 7.)

Maximum strength of plaster is obtained by not exceeding recommended proportions of lightweight aggregate to gypsum and plastering to full grounds.

A sand float finish is recommended over all lightweight aggregated basecoat plasters.

Gypsum gauged lime putty trowel finish, being hard and brittle, is not compatible with lower strength basecoats and cracking may result. If this finish is desired, it is recommended that 50# of #1 white silica sand or approximately ½ cu. ft. of perlite fines be used per 100 lbs. of gauging plaster. A smooth trowelled surface can be obtained.

Keenes Cement or STRUCTO-GAUGE finishes shall not be used over lightweight aggregated basecoats.

Sand aggregated gypsum plasters offer more favorable sound transmission loss ratings than do lightweight aggregated gypsum plasters.

USE OF AGGREGATES WITH GYPSUM CEMENT PLASTER—Maximum Recommended Proportions

Plastering Base	Number of Coats	Plaster to Sand By Weight	Weight of Plaster to Cubic Foot of Perlite or Vermiculite
Gypsum Lath	Three coats: Scratch coat Brown coat	1:2 1:3	100:2 100:3
	Two coats: Basecoat	1:2½	100:2½
Metal Lath	Three coats: Scratch coat Brown coat	1:2 1:3	100:2 100:3
Unit Masonry: Gypsum Tile Clay Tile Brick Cement Block	Three coats: Scratch coat Brown coat	1:3 1:3	100:3 100:3
	Two coats: Basecoat	1:3	100:3

See information above on light weight aggregates.

BASECOAT PLASTER APPLICATION

HAND APPLICATION METHOD

Plasters are applied by either the two or three coat method. In three coat work, the first (scratch) coat is applied to the base, cross-raked or scratched to provide a rough surface to receive the next coat, and allowed to set and partially dry. The second (brown) coat is applied next, filled out to grounds, levelled to a true plane surface, or to conform to the contours, curves or angles of the design, and left slightly roughened to receive the finish coat. The third (finish) coat is applied when the basecoat has dried sufficiently to receive it. The three coat method is required over metal lath, on certain solid plaster partition systems, on gypsum lath ceiling constructions where edge support clips are used, and is suggested over highly porous masonry surfaces.

In two coat work, the full thickness of the basecoat is applied to the base at one time, either in one or two applications. The levelling and finishing operations are performed in the same manner as in three coat work.

MACHINE APPLICATION METHOD

Machine plasters are manufactured and formulated to withstand the unusual effects common to plastering machine operations such as pressure, agitation, flow through long lengths of hose, and dispersion through the nozzle. They are designed to flow and pump easily and to maintain their excellent plastic working qualities after being sprayed in place. Plasters designed for hand application normally cannot be expected to display this degree of performance when pumped, and conversely, plasters designed for machine application should not be hand applied.

Most USG basecoat plasters made for machine application are supplied without fiber. If fiber is required, they can be supplied with specially processed fibers which will not interfere with plastering machine operation or the flow of plaster through the nozzle.

The same aggregate proportioning and application method recommendations shown herein apply to both hand and machine applied plaster.

Exhaustive tests show that plaster applied by machine generally develops slightly greater strength and hardness than the average figures shown for hand applied plaster, providing that all other factors which affect the strength of plaster are identical. These factors include water usage, setting time, aggregate type and proportioning, drying time and job practices. These advantages can, of course, be nullified by the improper use of excessive water or retarder on the job. Neither of these practices are necessary if good machine operation procedures are followed and the plaster is properly mixed with correct aggregate proportions.

Using proper techniques, the machine method of application often effects economies in plaster construction. This method of application has added to the design possibilities of plastering materials, including greater versatility in the ways in which plaster products can be used. This is particularly true in the fireproofing and acoustical treatment fields.

The following USG Plaster Products are now available for machine application:

RED TOP Cement Plaster for Machine Application (Unfibered)
RED TOP Cement Plaster for Machine Application (Fibered)

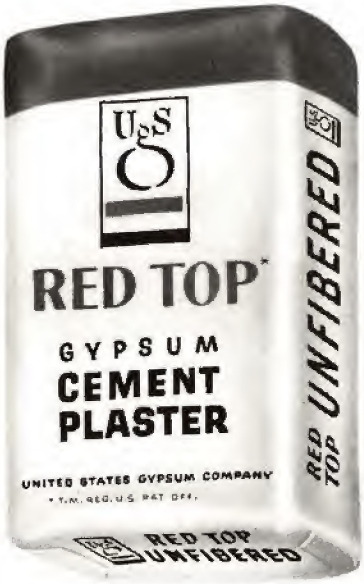
RED TOP STRUCTO-LITE Plaster for Machine Application (Regular)
RED TOP STRUCTO-LITE Plaster for Machine Application (Masonry)

BONDCRETE for Machine Application
ORIENTAL Interior Colored Finishing Plaster

RED TOP CEMENT PLASTER

RED TOP Cement Plaster is a neat gypsum basecoat plaster to which water and an aggregate are added on the job. Complies with ASTM Designation C28 for neat gypsum plaster and Federal Specification SS-P-402, Type N. Used for both first (scratch) and second (brown) coats.

Available in following formulations: Regular—For use with sand aggregate, hand application. LW—For use with lightweight aggregates, hand application. Machine Application—for sand or lightweight aggregates.



Function and Utility

Architects and builders specify RED TOP Cement Plaster:

1. To meet specific published fire ratings as established by local fire codes or insurance rating bureaus;
2. To provide mass for better sound insulation properties;
3. To provide a harder, stronger basecoat;
4. For real economy. The neat gypsum used in RED TOP Cement Plaster is inexpensive. It is mixed with economical aggregate which increases its bulk and its coverage. Highly plastic, it is easily and quickly applied.
5. To take advantage of the several special formulations developed to insure best quality results when used with the various types of aggregates and whether applied by hand or with machine.

RED TOP WOOD FIBER PLASTER

RED TOP Wood Fiber plaster is a gypsum basecoat plaster which contains selected wood fiber, finely shredded. It requires the addition of only water on the job.

RED TOP Wood Fiber Plaster complies with ASTM Designation C28, gypsum wood-fibered plaster, and Federal Specification SS-p-402, Type W.

By comparison with plaster sanded 1:3, RED TOP Wood Fiber plaster has approximately three times greater compressive strength, two and one half times greater impact strength, and 50 per cent greater hardness. Offers far greater resistance to cracking.

RED TOP Wood Fiber Plaster has greater fire resistance than sanded plaster basecoats at equal thickness. See Technical Data on page 7.

It is ready for use—needs only water. Eliminates risk of improper proportioning of plaster and aggregate. Over *unit* masonry, because of excessive suction, *up* to one part of sand *may* be added.

A wood fiber basecoat plaster job costs only 10 to 15 per cent more than the same job done with RED TOP Cement Plaster sanded on site.

Limitations of Use

1. RED TOP Cement Plaster must have aggregate added strictly according to specifications. Use of too much aggregate drastically decreases its strength.

2. Where sound transmission is the prime consideration in partition or ceiling assemblies use *sand* aggregate only, since mass is a controlling factor.

3. BONDCRETE should be used on interior concrete surfaces providing the surface is sufficiently rough to provide a proper bond. Maximum thickness of BONDCRETE and basecoat shall not exceed ⅜" on ceilings or ⅝" on walls. If additional thickness is required, self-furring metal lath should be secured to the concrete surfaces. Under no circumstances should RED TOP Cement Plaster or Wood Fiber plaster be applied directly to monolithic concrete.

4. Gypsum Plasters should not be used where in contact with excessive water or moisture conditions. In such instances use portland cement-lime plaster.

Gypsum Plasters may be applied to ceilings or open porches, car-ports, soffits of eaves, walkways, and canopies, but only when these surfaces are horizontal or inclined away from the structure. All such plaster surfaces should be protected from direct exposure to rain and suitable drips and casings provided along edge exposure.

5. Plaster application on masonry walls or concrete,

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*T.M. Reg. U.S. Pat. Off.

RED TOP STRUCTO-LITE* PLASTER

RED TOP STRUCTO-LITE plaster is a high quality basecoat plaster prepared at the mill by a careful proportioning of expanded perlite and gypsum plaster. For use on the job it requires only the addition of water.

STRUCTO-LITE complies with ASTM Designation C28 for gypsum ready-mixed plaster.

Available in several special formulations:

- Regular STRUCTO-LITE
- Masonry STRUCTO-LITE—for use on high suction unit masonry bases only.

Both products are available for machine application.

The proper proportioning of gypsum cement plaster with a well graded, controlled-density perlite aggregate, and the establishment of a mill-controlled set, help to assure uniform strength in the plaster slab. Because the perlite in STRUCTO-LITE conforms with exacting specifications for density, strength, and gradation, and is thoroughly mixed with the cement plaster at the mill, the plaster coat is of uniform hardness throughout.

STRUCTO-LITE has excellent fire ratings. See Technical Data on page 7.

BONDCRETE* PLASTER

RED TOP BONDCRETE is a gypsum basecoat plaster specially formulated to bond firmly with rough interior monolithic concrete surfaces. It is factory-mixed, and on the job requires only the addition of water to make it ready for use. Complies with ASTM Specification C-28.

BONDCRETE provides a base to receive a brown or leveling coat of RED TOP Cement plaster or Wood Fiber Plaster where three coats are to be used.

If a leveling coat is not required, the finish plaster can be applied directly to the BONDCRETE with excellent results.

BONDCRETE has approximately the same coefficient of expansion as concrete.

BONDCRETE adheres to properly prepared concrete surfaces. For proper conditioning of surfaces, see Specifications, Surface Preparation, page 10. Correct preparation is important.

The low cost of BONDCRETE makes it an economical bonding coat for application directly to rough concrete surfaces.

A specially formulated BONDCRETE for machine application is available.

that have been coated with bituminous compounds, is not recommended.

Because of the possibility of condensation or water seepage, plastering directly to interior side of solid exterior masonry walls above grade or exterior foundation walls below grade is not recommended. In each instance they shall be furred and lathed before plastering. Sub-grade construction should be water-proofed on the exterior side.

6. Radiant heat plaster slabs shall not have surface temperatures exceeding 115° Fahrenheit. Check conductivity of the plaster and aggregate. The thermal conductivity of gypsum-sand plaster is approximately three times that of STRUCTO-LITE.

7. Basecoat plasters must not abut or die against the hollow metal door frame return, unless provision is made to dampen the trim return vibration by grouting, special anchors, or both. Lath and plaster should recess into or behind metal frames or base.

8. Gypsum Plasters designed for Machine Application should be used in plastering machines only. They are not intended for application using hand methods.

9. On remodeling work where a new plaster surface is to be applied over an existing wall or ceiling, the use of self-furring metal lath, with scratch and brown coats of neat wood fiber plaster, will give superior results.

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PORTLAND CEMENT-LIME PLASTER AND EXTERIOR STUCCO BASECOAT

Portland cement-lime plaster is prepared on the job from Portland cement, lime, sand, and water, in the following proportions: For the scratch coat 1 bag of Portland cement, 2 bags of MORTASEAL* lime, 7½ cubic feet of sand, and (over metal lath or stucco mesh) 2 lb fiber. For the brown coat, 1 bag Portland cement, 2 bags MORTASEAL, and 9 cubic feet of sand. It is used for application directly to concrete block, clay tile, or metal lath as a base for ceramic tile, or in areas subject to high-moisture conditions.

It is the basecoat for ORIENTAL* Exterior (colored) finish. It is used for the scratch (first) coat and brown (second) coat over cement block or clay tile, or over sheathing to which STUCCO MESH or self-furring metal lath has been properly applied.

Limitations of Use

1. Each coat requires curing with water after set.

2. Must not be applied directly to smooth, dense surfaces, gypsum lath, or gypsum block. Metal lath must be secured to such surfaces before plaster is applied.

3. Provision is needed for relief of shrinkage in setting and drying at points where ceiling and wall meet, or where beams, columns, and fixtures pass through the plaster. Expansion joints should be provided to avoid excessive continuous areas.

FINISHING COAT PLASTERS

Description

Finish coat plaster provides the base for wall or ceiling decoration. It is usually applied over a gypsum plaster basecoat, and to a thickness of 1/16 to 1/8 inch.

Each of the several available types of finish coat has individual characteristics to meet special requirements. These types are generally classified according to the principal cementitious ingredient.

Types

1. Gypsum-gauged-lime, commonly known as "white coat," for a smooth, white trowel finish. It consists of lime properly prepared to a smooth putty and mixed with gypsum gauging plaster. With the addition of sand, it is adaptable for sand float finishes. Structo-gauge is a recent development in gauging plaster which produces high compressive strengths. Lime putty, gauged with Structo-gauge produces economically an extremely hard smooth trowel finish.
   For a good white coat, the lime must be highly plastic and properly hydrated. Gauging plaster must be correctly proportioned to lime putty, and ingredients must be thoroughly blended. Careful application and sufficient trowelling during and after set are essential to produce a smooth, glossy surface.
   Over lightweight aggregate basecoats, the addition of up to 25# of fine Silica Sand, or up to ½ cu. ft. of perlite fines, per 100# of gauging plaster is recommended, to improve working qualities and to help minimize map-cracking.
2. Keene's Lime: for a hard, smooth, white trowel finish. With the addition of sand, it is adaptable for sand float finishes. Also available mill-mixed and colored under ORIENTAL Interior Finish brand.
3. Gypsum, for trowel (smooth) or sand float prepared finishes.
4. Acoustical Plaster, for sound absorption. Available in SABINITE*, AUDICOTE†, and HI-LITE† types. See page 9.

Dolomitic Lime Hydration

The United States Gypsum Company was the leader in solution of the dolomitic lime hydration problem with the development of IVORY* Double Hydrated finishing lime. This is a "fully" or "pressure" hydrated (less than 8 per cent unhydrated) Ohio dolomitic finishing lime.

ASTM Specification C206 for special finishing lime, and proposed amendments to Federal specifications, cover fully (92 per cent) hydrated limes. The National Lime Association has published its own specifications. This type of finishing lime is required by American Standards Association Specifications for Gypsum Plastering, A42.1-1955.

All high calcium hydrated limes, properly soaked, comply with these requirements, as do high calcium quicklimes, properly slaked.

TECHNICAL DATA—FINISH PLASTERS

	GAUGING PLASTER TO LIME	STRUCTO-GAUGE TO LIME		QUICK TROWELING KEENE'S TO LIME		GYPSUM TROWEL FINISH	GYPSUM FLOAT FINISH	ORIENTAL FINISH
Mix by weight of dry materials:	1:2	1:2 Medium Hard	1:1 Hard	2:1 Medium Hard	4:1 Hard	NEAT	NEAT	NEAT
Color	White	White	White	White	White	White	White or Gray	7 Colors
Finish Texture	Smooth	Smooth	Smooth	Smooth	Smooth	Smooth	Float	Float
Hardness in Kilograms (†)	34	56	108	50	70	55	(‡)	(‡)
Workability	1	1	2	4	7	3	6	5
Cost Factor Labor & Mat'l.	100	125	150	170	180	125	125	160

(†) Kilograms required to force a 10mm ball .01" into plaster face.

(‡) These are hard finishes but the aggregate in the surface does not permit an indication with this test.

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FIRE TEST DATA (All tests made at nationally recognized fire testing laboratories)

CONSTRUCTION	PANEL TYPE			RATING
	TYPE BASE	PLASTER & AGGREGATE (H)	THICKNESS	
		PARTITIONS		
Wood Frame	⅜″ ROCKLATH* Plain	Gypsum-Sand 1:2,	½″	45 Minutes
Wood Frame	⅜″ ROCKLATH Plain	Gypsum Wood Fiber	½″	1 Hour
Wood Frame	⅜″ Perf. ROCKLATH	Gypsum-Sand 1:2,	½″	1 Hour
Wood Frame	⅜″ Perf. ROCKLATH	Gypsum-Perlite 100:2½	½″	1 Hour
Wood Frame	⅜″ Perf. ROCKLATH	Gypsum Vermiculite 100:2½	½″	1 Hour
Wood Frame	Metal Lath	Gypsum-Sand 1:2, 1:3	¾″	45 Minutes
Wood Frame	Metal Lath	Gypsum-Sand 1:2, 1:2	¾″	1 Hour
Wood Frame	Metal Lath	Gypsum Wood Fiber	¾″	1½ Hours
Wood Frame	Metal Lath	Gypsum-Vermiculite 100:2½, 100:3½	¾″	1 Hour
3″ Hollow PYROBAR*		Gypsum-Sand 1:3	½″	3 Hours
4″ Hollow PYROBAR		Gypsum-Sand 1:3	½″	4 Hours
Solid	Metal Lath	Gypsum-Sand 1:2, 1:3	2″	45 Minutes
Solid	Metal Lath	Gypsum-Sand 1:2, 1:2	2″	1 Hour
Solid	Metal Lath	Gypsum-Perlite 100:2, 100:3	2½″	2 Hours
Solid	ROCKLATH	Gypsum-Sand 1:1, 1:2	2″	1 Hour
Solid	ROCKLATH	Gypsum-Perlite 100:2, 100:3	2″	1½ Hours
TRUSSTEEL* Stud	Metal Lath	Gypsum-Sand 1:2, 1:3	¾″	45 Minutes
TRUSSTEEL Stud	Metal Lath	Gypsum-Sand 1:2, 1:2	¾″	1 Hour
TRUSSTEEL Stud	Metal Lath	Gypsum-Sand 1:1, 1:2	¾″	1½ Hours
TRUSSTEEL Stud	Metal Lath	Gypsum Wood Fiber	⅞″	2 Hours
TRUSSTEEL Stud	Metal Lath	Gypsum-Perlite 100:2, 100:3	1″	2 Hours
TRUSSTEEL Stud	⅜″ Perf. ROCKLATH BRACE-TITE* Clips	Gypsum-Sand 1:2 or STRUCTO-LITE*	½″	1 Hour
		CEILINGS		
Wood Frame	⅜″ Perf. ROCKLATH (A)	Gypsum-Sand 1:2	½″	1 Hour
Wood Frame	⅜″ Perf. ROCKLATH	Gypsum-Perlite 100:2½	½″	1 Hour
Wood Frame	Metal Lath (B)	Gypsum-Sand 1:2, 1:3	¾″	1 Hour
Wood Frame	Metal Lath	Gypsum Wood Fiber	¾″	1 Hour
Steel Joist (C)	⅜″ Perf. ROCKLATH BRACE-TITE Clips Channels 16″ o.c.	Gypsum-Perlite 100:2½ or STRUCTO-LITE	⅝″	1 Hour
Steel Joist (C)	Same, plus 14 Ga diagonal wire connecting clips	Gypsum-Perlite 100:2½ or STRUCTO-LITE	½″	2 Hours
Steel Joist (C)	Same, except channels 12″ o.c.	Gypsum-Perlite 100:2½ or STRUCTO-LITE	⅝″	3 Hours
Steel Joist (C)	Metal Lath	Gypsum-Sand 1:2, 1:3	¾″	2 Hours
Steel Joist (C)	Metal Lath	Gypsum-Vermiculite 100:2, 100:3	¾″	3 Hours
Steel Joist (C)	Metal Lath	Gypsum Wood Fiber	1″	3 Hours
Steel Joist (C)	Metal Lath	Gypsum-Vermiculite 100:2, 100:3	1″	4 Hours
Cellular Steel Floor	Metal Lath (D)	Gypsum Wood Fiber	1″	4 Hours
Cellular Steel Floor	Metal Lath (E)	Gypsum-Vermiculite 100:2, 100:3	1″	4 Hours
Cellular Steel Floor	Metal Lath (D)	Gypsum-Perlite 100:2, 100:3	1″	4 Hours
Cellular Steel Floor	Metal Lath	Fire Rated STRUCTO-LITE (Type "R")	¾″	3 Hr. (Beam 4 Hr.)
Suspended Channel Ceiling (incombustible constr. above)	Metal Lath	Fire Rated STRUCTO-LITE (Type "R")	11/16″	3 Hours
		COLUMNS		
Steel Section	Metal Lath	Gypsum-Sand 1:2, 1:3	¾″	1 Hour
Steel Section	Metal Lath (F)	Gypsum-Perlite 100:2, 100:3	1″	2 Hours
Steel Section	Metal Lath (F)	Gypsum-Perlite 100:2, 100:3	1⅜″	3 Hours
Steel Section	Metal Lath (F)	Gypsum-Perlite 100:2, 100:3	1¾″	4 Hours
Steel Section	Metal Lath (G)	Fire Rated STRUCTO-LITE (Type "R")	1¾″	4 Hours
Steel Section	PYROBAR*-2″ Solid, or 3″ Hollow	Gypsum-Sand 1:3	½″	4 Hours
Steel Section	⅜″ Perf. ROCKLATH	Gypsum-Sand 1:2½	½″	1 Hour
Steel Section	⅜″ Perf. ROCKLATH	Gypsum-Sand 1:2½	⅝″	1½ Hours
Steel Section	⅜″ Perf. ROCKLATH	Gypsum-Perlite 100:2½	1″	2 Hours
Steel Section	⅜″ Perf. ROCKLATH	Gypsum-Perlite 100:2½	1¾″	3 Hours
Steel Section	2 layers L. L. R. L. Plus 1″ 20-ga. mesh	Gypsum-Perlite 100:2, 100:3	1½″	4 Hours

(A) Lath applied with 1⅛″, 13 gauge nails, ⅜″ head and joints covered with Striplath. 1¾″ nails. (B) Lath applied with 1½″, 11 gauge, 7/16″ head barbed roofing nails, 6″ O.C. (C) 2½″ reinforced concrete slab on Riblath or 2″ precast gypsum tile above. (D) Ceiling 9″ or more below floor slab. (E) Ceiling 3″ or more below floor slab. (F) Self-furring metal lath wrapped tight to column, or diamond mesh on channel frame not filled solid to column. (G) Lath furred ½″ at column corners with channels.

TECHNICAL DATA—BASECOAT PLASTERS (1)

PLASTER	MIX	COMPRESSIVE STRENGTH	WEIGHT	CONDUCTIVITY "K"
		(PSI-DRY)	(Lb/Cu. Ft. Dry)	
STRUCTO-LITE (Regular)		900	50	1.74
WOOD FIBER	Neat	2000	77	3.15
CEMENT PLASTER, MIXED WITH:				
Sand	1:1	1800	90	
	1:2	1065	103	5.51
	1:3	650	102	5.60
Perlite	100:2	900	48	1.64
	100:3	550	41	1.31
Vermiculite	100:2	485	48	1.74
	100:3	290	41	1.42

(1) Average Test Results. Figures May Vary Slightly For Products From Individual Mills.

*T. M. Reg. U. S. Pat. Off.

GAUGING PLASTERS

CHAMPION* and STAR* White Gauging Plasters for blending with lime putty to provide initial set and strength. CHAMPION for fast set, STAR for slow set. Ground to blend readily and completely, minimizing risk of check-cracking and crazing. Give strength and hardness to surface finish. Comply with ASTM Designation C28-55 and Federal Specification SS-P-402, Type G.

RED TOP Gauging Available with slow or quick set. Distinguished from White Gauging Plasters by its darker color; otherwise the equal of CHAMPION and STAR in every respect. Complies with same ASTM and federal specifications.

STRUCTO-GAUGE A high strength gypsum gauging plaster for use with lime putty to produce surfaces of extreme hardness and durability. Has excellent mixing qualities, is easily applied, and needs minimum troweling to give a smooth finish. Complies with same ASTM and Federal Specifications with added requirement of compressive strength (neat) of not less than 5000 psi (dry).

FINISHING LIMES

All USG Finishing Limes are manufactured by a revolutionary new gas-fired kiln process. These products exhibit superior working qualities, whiteness and uniformity. Hydrated Finishing Lime (or Finishing Quicklime) is soaked (or slaked) to putty consistency, properly blended with gypsum gauging plaster, and troweled to a smooth, hard finish.

IVORY*. A double hydrated special finishing lime that will not expand measurably in the wall. Requires no soaking to produce smooth, uniform, white, and highly plastic putty. Complies with ASTM Designation C206-49 Types S and Federal Specification SS-L-351, Type F, including the added requirement of not more than 8% unhydrated oxides.

RED TOP and GRAND PRIZE* Normal Ohio dolomitic hydrated finishing limes. Comply with ASTM Designation C6, Type N, and Federal Specification SS-L-351, Type F, but not with specifications limiting unhydrated oxides to not more than 8 per cent.

RED TOP and CHESHIRE* High calcium finishing quicklimes. When properly slaked and aged at least 16 hours, hydration is virtually complete. Comply with ASTM C5 and Federal Specification SS-Q-351, including added requirement of not more than 8% unhydrated oxides (when properly slaked).

KEENE'S CEMENT

RED TOP Keene's cement is a high strength, white gypsum plaster. Keene's lime finish is composed of lime putty blended with keene's cement in proportions required to obtain desired hardness. Complies with ASTM Designation C61-40 and Federal Specification SS-C-161, Type I (Regular) and Type II (Quick Troweling). Regular Keene's sets slowly, requires more troweling and may be used with any proportion of lime.

Quick Troweling Keene's sets faster, requires less troweling and must be used with a minimum of 25 lbs. of dry hydrated lime per 100 lbs. of Keene's cement.

LIMITATIONS OF USE—FINISHES

1. All finishes (except ORIENTAL Exterior) should be used for interior application only, generally over a gypsum basecoat not exposed to water. If exposure to wetting is extreme or continuous use portland cement—lime plaster base-coat and finish.

2. Recommended proportions must be observed. Failure to use sufficient gauging plaster or Kenne's, to blend thoroughly or to trowel adequately, or trowelling too soon before the set takes place may result in check cracking, crazing, lack of hardness and bond failure.

3. The use of smooth trowelled lime or gypsum finishes is not recommended over basecoats in the lower compressive strength range. Use sand float finishes. For smooth putty coat finishes over basecoats containing lightweight aggregates in the higher strength range, the addition of 50# of #1 white Silica Sand or ½ cu. ft. of perlite fines per 100# of gauging plaster is recommended for improved working qualities and to minimize check cracking.

4. Where increased hardness and resistance to abrasion is required use STRUCTO-GAUGE, Keene's Cement or Gypsum Trowel Finish. (See technical data for relative hardness, Page 6). These finishes may be applied over Wood Fiber or Sanded Plaster Basecoats only.

5. Acoustical plasters are designed for use on ceilings and areas not exposed to rough usage.

6. Acoustical plasters are not recommended over radiant heated panel areas due to low thermal conductivities.

7. ORIENTAL Exterior Stucco must be applied over a properly cured Portland cement—lime basecoat, using hand application methods only.

*T.M. Reg. U.S. Pat. Off.

PREPARED GYPSUM

RED TOP Gypsum Trowel and RED TOP GYPSUM Sand Float. Mill-prepared gypsum finish coat plasters which require only the addition of water. There are no ASTM or Federal Specifications covering this type of plaster.

RED TOP Gypsum Trowel Finish is used where hard, smooth finishes are desired.

RED TOP Gypsum Sand Float Finish is used where a quality float finish is desired.

Strength. Approximately twice the impact strength of ordinary lime-gauging finishes.

Early decoration. May be painted as soon as plaster is set and dry.

Nonalkaline. These finishes contain nothing injurious to paint or other decoration.

COLORED

ORIENTAL Interior Colored Finishing Plaster. A mill prepared, mill colored finish plaster which requires only the addition of water. There are no ASTM or Federal Specifications covering this type of plaster.

Colors: White, with 81% light reflection for float finish; Pewter Gray, 52%; Surf Green, 56%; Desert Rose, 56%; Azure, 58%; Sahara Gold, 63%. This product is to be used on interior surfaces only. It may be floated, textured, or applied by machine, but in no case is it to be trowelled smooth. It provides very great hardness which gives excellent abrasion resistance.

ORIENTAL Exterior. A mill-prepared stucco for exterior use over a portland cement-lime basecoat only; requires only the addition of water.

Colors: Pewter Gray, Eggshell Ivory, Sun Tan, Stone Gray, Copper Rose, Alamo Buff, Mission Cream, Cascade Green, Pueblo Tan, Indian Coral, Rancho Brown, White. Adaptable to any texture. Requires no decoration; mill preparation of color eliminates risk of variation due to job addition. Not designed for smooth trowel finish.

MOULDING PLASTERS

Moulding Plasters are made for specialized work such as casting ornamental enrichments or running cornices. In cast work, moulding plaster is used neat. For running cornice a small amount of lime is added. Moulding plaster is available in white and local grades and in quick or slow set.

CASTING PLASTER

RED TOP Superfine Casting Plaster is similar to RED TOP White Moulding Plaster, but with much finer particle size. Ideal for modeling done directly in plaster. The tiny particles assure smoother castings and excellent detail for fine plaques and art statuary. Requires only the addition of water.

ACOUSTICAL

SABINITE*. A highly efficient acoustical plaster which produces a continuous trowel or float finish of exceptional sound absorbent qualities. Manufactured in four standard colors and white. Requires addition of water only. Incombustible.

HI-LITE*. A highly efficient acoustical plaster with high light reflecting qualities; provides a stipple or stipple perforated finish. Has harder surface than SABINITE; more suitable for side walls above wainscots which require sound conditioning. White only. Over 75% light reflection. Requires addition of water only. Can be applied over either gypsum or Portland cement-lime basecoats. Adaptable for acoustical treatment of areas similar to swimming pool enclosures.

AUDICOTE*. A prepared acoustical plaster requiring only the addition of water. May be applied by machine or by hand over gypsum plaster, portland cement-lime plaster, monolithic concrete surfaces that are clean and free of water-soluble materials or oily film. Made in Satin White (65% light reflection) and Special White (70% light reflection).

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*T.M. Reg. U.S. Pat. Off.

Notes to Architect

Select one or more of the following basecoat plasters, aggregates and finish coat plasters as desired or required to meet fire-resistant ratings. Where conductivity of the plaster is a factor, see limitations on Pages 3, 4, and 10.

Where "contact," "furred" or "suspended" lath and plaster ceilings are located under roof deck construction, it is recommended that the space thus established be ventilated. Such ventilation, with or without vapor barrier and insulation, shall be designed in accordance with accepted engineering practice.

I. Scope. Unless otherwise specified or shown on the drawings, all walls and ceilings shall be plastered as herein described.

II. GENERAL PROVISIONS. In cold weather, the temperature of the building shall be maintained in the uniform range above 55° for an adequate period prior to the application of plaster, while the plastering is being done, and after the plaster is dry. The heat shall be well distributed in all areas, with deflection or protective screens used to prevent concentrated or irregular heat on plaster areas near source. When required, heat shall be furnished by

....

Ventilation shall be provided to properly dry the plaster during and subsequent to its application. In glazed buildings, this shall be accomplished by keeping windows open sufficiently to provide air circulation; in enclosed areas lacking normal ventilation, provisions must be made to mechanically remove moisture laden air.

If glazed sash are not in place and the building is subjected to hot, dry winds or temperature differentials from day to night of 20°F or more, openings shall be screened with cheesecloth or similar material.

III. GROUNDS. The minimum thickness of plaster over 16"x48" gypsum lath shall be ½"; over gypsum partition tile brick, clay tile or other masonry, it shall be ⅝" thick; over metal lath, the plaster thickness shall be ⅝" measured from the face of the lath; and ¾" over long length gypsum lath. Solid plaster partitions shall be (2"), (2¼"), (2½"), (3"). (A greater thickness in grounds may be required for certain fire ratings. See table, page 7, and specify accordingly.)

IV. MATERIALS. Base Coat Plaster shall be (STRUCTO-LITE), (RED TOP Cement Plaster), (RED TOP Wood Fiber Plaster), (BONDCRETE) as manufactured by the United States Gypsum Company.

Aggregate (for cement plaster), (wood fiber over unit masonry), shall be (sand), (perlite), (vermiculite) meeting the requirements of ASTM Designation C35-54T—"Inorganic Aggregate for use in Interior Plastering."

Aggregate for job mixed sand float finish shall be a graded silica sand all passing a (30 mesh), (20 mesh) screen.

Water shall be clean, fresh and suitable for domestic consumption.

For (Exterior Stucco Base), (Portland Cement-Lime plaster) the **Portland Cement** shall comply with A.S.T.M. Designation C150-47, the **Lime** shall be MORTASEAL as manufactured by the United States Gypsum Company, and the **Sand** shall be clean and sharp and shall meet the requirements of American Standards Association Specifications A42-2.

Finish Coat Plaster shall be:

a. Gypsum gauged lime putty trowel finish made from (IVORY Double Hydrated Lime), (RED TOP Finishing Lime), GRAND PRIZE Finishing Lime), and CHAMPION Gauging Plaster), (STAR Gauging Plaster), (RED TOP Gauging Plaster), as manufactured by the United States Gypsum Company.

b. High strength Gypsum gauged lime putty trowel finish made from (IVORY Double Hydrated Lime), (RED TOP Finish Lime), (GRAND PRIZE Finishing Lime), and (STRUCTO-GAUGE), (RED TOP Quick Trowelling Keene's Cement), as manufactured by the United States Gypsum Company.

c. RED TOP Gypsum Trowel Finish as manufactured by the United States Gypsum Company.

d. RED TOP Gypsum Sand Float Finish as manufactured by the United States Gypsum Company.

e. ORIENTAL Interior Colored Finish as manufactured by the United States Gypsum Company.

f. A job mixed sand float finish made from IVORY Double Hydrated Lime, RED TOP Keene's Cement and silica sand.

g. (SABINITE), (AUDICOTE), (Hi-Lite) Acoustical Plaster as manufactured by the United States Gypsum Company.

h. Ornamental run mouldings made with RED TOP Moulding Plaster and IVORY Double Hydrated Lime, and cast enrichments made with USG Casting Plaster, as required.

i. Exterior finish coat shall be ORIENTAL Exterior Colored finish as manufactured by the United States Gypsum Company.

V. SURFACE PREPARATION.

a. Monolithic concrete to which BONDCRETE is to be applied shall be cleaned of all dust, loose particles and other foreign matter. Laitance and efflorescence shall be removed by washing with a 10% solution of commercial muriatic acid and water, and then cleaning with water to remove all traces of acid. Grease and oil shall be completely removed. Concrete surfaces shall have sufficient roughness to provide proper bond. If surfaces are not rough, they shall be hacked or bush-hammered, or dash coated with Portland cement grout composed of one part of cement and one and one-half parts of fine sand mixed to a mushy consistency. This coat shall be kept damp for at least two days immediately following its application and then allowed to dry. Before application of the plaster, the surface shall be evenly dampened if necessary to reduce suction.

b. Unit masonry surfaces that exhibit high suction shall be moderately wetted immediately before plastering.

c. Where RED TOP AUDICOTE acoustical plaster is indicated for application direct to smooth monolithic concrete, low reinforcing bar chair legs shall be galvanized. Bottom ends of high reinforced bar chairs shall be coated with rust inhibitive paint and use of nails or other raw steel against forms or surface of concrete held to a minimum. Where metal is exposed in spite of these precautions, and where AUDICOTE is to be applied directly against corner beads or casing beads, the metal should be treated with one coat of aluminum paint.

VI. BASE COAT PROPORTIONS.

a. STRUCTO-LITE shall be regular formula for all lath bases and masonry formula for masonry bases.

b. RED TOP Cement Plaster for the scratch or first coat over all lath bases in three-coat work shall be mixed in proportion of (one part of plaster to not more than two parts of sand by weight), (100 pounds of plaster to two cubic feet of perlite), (100 pounds of plaster to two cubic feet of vermiculite). (NOTE—See exception in Chart on Page 3.)

RED TOP Cement Plaster for all unit masonry surfaces and for the brown or second coat over lath bases shall be mixed in the proportion of (one part plaster to not more than three parts sand by weight), (100 pounds of plaster to three cubic feet of perlite), (100 pounds of plaster to three cubic feet of vermiculite).

RED TOP Cement Plaster, when mixed for two-coat work over gypsum lath, shall be mixed in the proportion of (one part of gypsum to not more than 2½ parts of sand by weight), (100 pounds of gypsum to not more than 2½ cubic feet of perlite), (100 pounds of gypsum to not more than 2½ cubic feet of vermiculite).

c. RED TOP Wood Fiber Plaster. For application over all types of lath, shall be mixed with water only.

For masonry surfaces (except monolithic concrete), the scratch and brown coats of wood fiber plaster may have up to one part of sand by weight added, if needed to counteract excessive suction in the base.

d. BONDCRETE shall be mixed with clean water only.

e. For (Exterior Stucco), (Portland Cement-Lime plaster), the scratch (first coat) shall be mixed in the proportion of one bag of Portland cement; two bags of MORTASEAL (or two cubic feet of lime putty) and seven and one-half cubic feet of sand (approximately 45 No. 2 shovels). For application over stucco mesh or self-furring metal lath, approximately two pounds of fiber or hair shall be added to each mix of the above proportions.

The brown coat (second coat) shall be mixed in the proportion of one bag of Portland cement, two bags of Mortaseal (or two cubic feet of lime putty) and nine cubic feet of sand (approximately 55 No. 2 shovels).

VII. GROUT. Grout for door frames and metal base shall be (Structo-Lite), (Red Top Cement Plaster) and not more than (200 pounds sand), (2 cubic feet of perlite) per bag of plaster.

VIII. MIXING OF BASE COATS. For hand mixing, the mixing boxes shall be watertight and thoroughly clean of all set or hardened material. All tools and equipment shall be cleaned after mixing each batch. Do not mix more material than can be used in one hour.

a. Structo-Lite shall be mixed with clean water only and hoed to uniform application consistency.

b. Red Top Cement Plaster and aggregate shall be mixed dry to a uniform color at one end of the box, hoed into the water at the other end and thoroughly mixed to proper consistency.

c. Red Top Wood Fiber shall be mixed with clean water only and hoed to uniform application consistency. (For application over unit masonry aggregate shall be added and dry mixed prior to adding water.)

d. Bondcrete shall be mixed with clean water only and hoed to uniform application consistency.

For mechanical mixing, the mixer shall be cleaned of all set or hardened material before materials for a new batch are loaded. Each batch shall be mixed separately, not less than 2 minutes or more than 7 minutes, depending on the speed of the mixer. Material that has partially set shall not be retempered or used. Mix no more material than can be used in one hour. Mixers should be equipped with rubbertipped blades to keep partially set material from accumulating in the barrel of the mixer.

a. For Structo-Lite plaster, no aggregate shall be added. Put the approximate amount of water in the mixer and add the Structo-Lite and mix to proper application consistency, adding water if necessary, and dump the entire batch and use.

b. Red Top Cement Plaster; put the approximate amount of water required in the mixer, then, while the mixer is in continuous operation, add approximately half the amount of aggregate required, add all of the plaster and add the remainder of the aggregate. Mix to proper application consistency, adding water if necessary, and dump the entire batch.

c. For Gypsum Wood Fiber Plaster; add the approximate amount of water required. Then add the plaster and mix to proper application consistency.

d. For Bondcrete Plaster, add clean water only, then add the plaster and mix to proper application consistency.

IX. GROUTING.

a. All steel door frames in (solid lath and plaster partitions) (steel stud partitions) shall be fully grouted prior to lathing, leaving a groove to receive the lath.

b. All 2½″ flush metal base for solid lath and plaster partitions and furred exterior walls shall be grouted. Provide a V-Groove to receive (Rocklath plaster base) (⅜″ Riblath). (Grout after channel studs are erected for channel stud metal lath partitions.)

c. All metal base applied to masonry or stud partitions shall be grouted.

X. BASE COAT APPLICATION.

a. Either hand or machine application methods may be used. For two-coat work over gypsum lath and masonry, the base (first) coat shall be applied with sufficient material and pressure to form a good bond on the gypsum lath or masonry, as the case may be and to cover well, and then be doubled back to bring the plaster out to grounds, straightened to a true surface with rod and darby, and left rough, ready to receive the finish (second) coat.

b. For three-coat work, the scratch (first) coat shall be applied with sufficient material and pressure to form good full keys on metal lath, and a good bond on gypsum as the case may be, and to cover well, and then be cross scratched to a rough surface. The brown (second) coat shall be applied after the scratch (first) coat has set firm and hard, brought out to grounds and straightened to a true surface with rod and darby and left rough, ready to receive the finish (third) coat.

c. For (2¼″) solid gypsum lath and plaster partitions, apply a scratch coat of plaster with a maximum 3-hour set, about ⅜″ thick, to each side of the lath. In no case, shall application of scratch coat to second side of lath be delayed longer than the setting time of the scratch coat applied to the first side. Scratch lightly in horizontal direction only.

After the scratch coats have set firmly and have partially dried (but not less than 16 hours), the brown coat shall be applied to the unbraced side, bringing it out to within 1⁄16″ of ground dimension for finish coat. When brown coat has set firmly (but not less than 3 hours), braces shall be carefully removed from opposite side and brown coat applied to that side in a manner similar to that described for the other brown coat.

d. For (2¼″) solid studless metal lath and plaster partitions apply scratch coat and allow it to set and partially dry. Then apply brown coat to side opposite braces, allowing it to set thoroughly before removing temporary braces. Next apply brown coat to previously braced side, bringing it out to sufficient thickness to bring overall partition thickness to grounds when finish coats are applied to both sides.

e. For (2¾″) channel stud, metal lath and plaster partitions apply scratch coat on lath side and allow it to set and partially dry. Then apply back-up coat on channel side to full grounds, ⅝″ over channels, in not less than two operations and allow to set. Next apply brown coat on lath side bringing it out to sufficient thickness to bring overall partition thickness to grounds when finish coats are applied to both sides.

f. For resilient Rocklath ceilings, three coat plaster work shall be used. Apply a full scratch coat, cross rake and allow to set. Then apply brown coat to bring total thickness of plaster to 7⁄16″ over the lath, darby level and leave rough ready for finish coat.

g. For Brace-tite system ceilings, apply Gypsum plaster in two or three coats to a thickness of ½″. If two-coat method is used, the job setting time of the basecoat plaster shall not exceed three hours. A minimum period of 20 minutes shall be allowed between Scratch coat and double-back applications in two-coat plastering over both plain and perforated ROCKLATH plaster base. Proper heat and ventilation during plastering is mandatory for good two-coat performance.

h. For (exterior wall furring) (hollow partitions) having long length Rocklath three-coat plaster work shall be used to a total thickness of ¾″ over the lath.

i. For column fireproofing total thickness of plaster over lath face shall be (½″), (⅝″), (1″), (1⅜″), (1¾″). Apply a full scratch coat, cross rake and allow to set. Then apply brown coat to within 1⁄16″ of thickness required and leave level and rough ready for application of finish coat.

j. Where plaster finish is flush with metal bases, door frames, window frames or similar constructions, both the brown coat and the finish coat should be grooved back at the intersection to reduce possibility of chipping of plaster at these points.

k. At windows, doors and other openings all base coat plaster across head of opening and 12 inches down, each side, shall be cut free of frame or grounds with edge of trowel, after stiffening but before setting, to allow for expansion.

l. Scratch coat of (Exterior stucco) (Portland cement—Lime plaster) shall be applied in a full ⅜″ coat, with sufficient pressure to form a good bond with masonry surfaces or to force it through and completely embed the metal reinforcement. Cross scratch and, after set, damp cure for not less than 48 hours.

Brown coat shall be applied over the dampened scratch coat in a full ⅜″ coat with sufficient pressure to form a good bond, rodded level and left rough, using a broom if necessary. After set, damp cure for at least 48 hours before applying the finish (third) coat.

Damp curing of each coat shall be accomplished by applying water in a fine, fog spray. Apply only as much water as is readily absorbed. The frequency of spraying required will depend on the weather exposure, more frequent applications being required during hot, dry and windy weather.

XI. PREPARATION OF LIME PUTTY. IVORY Finishing Lime shall be mixed with clean water only, using approximately 5½ to 6 gallons per bag. The putty may be prepared by overnight soak, or by mixing by hand or machine. Run mixer for sufficient time to get a smooth, thoroughly mixed putty which can be used immediately or run into a box for use as required. When stored in a box after mixing, do not permit putty to get crusty or to dry out. Mixer, tools and equipment must be clean.

XII. PROPORTIONS OF FINISH COATS.

a. Gypsum gauged lime putty finish shall be mixed in the proportions of 100 pounds of gauging plaster to 200 pounds of dry lime (400 pounds, or 34 gallons, of lime putty). Over lightweight aggregate basecoats, add up to ½ part (3 shovels) of fine Silica Sand, or up to ½ cu. ft. of perlite fines, per 100 pounds of gauging plaster.

b. Medium hard STRUCTO-GAUGE-Lime Putty Finish shall be mixed in the proportion of 100 pounds of (Structo-Gauge) to 200 pounds of dry lime (400 pounds, or 34 gallons, of lime putty).

c. Hard STRUCTO-GAUGE-Lime Putty Finish shall be mixed in the porportion of 100 pounds of STRUCTO-GAUGE to 100 pounds of dry lime (200 pounds, or 17 gallons, of lime putty).

d. Medium hard Keene's Cement-Lime Putty Finish shall be mixed in the proportion of 100 pounds of Keene's Cement to 50 pounds of dry line (100 pounds, or 8½ gallons of lime putty).

e. Hard Keene's Cement-Lime Putty Finish shall be mixed in the porportion of 100 pounds of Keene's Cement to 25 pounds of dry lime (50 pounds, or 4¼ gallons of lime putty).

f. Keene's Cement-Sand Float Finish shall be mixed in the proportion of 100 pounds of Keene's Cement to 50 pounds of dry lime and 400 pounds of sand (100 pounds, or 8½ gallons of lime putty) and 4 to 5 cubic feet of sand (27 No. 2 shovels of sand).

g. RED TOP Gypsum Trowel Finish shall be mixed with clean water only to proper application consistency.

h. RED TOP Sand Float Finish shall be mixed with clean water only to proper application consistency.

i. ORIENTAL Interior Colored Finish shall be mixed with clean water only to proper application consistency.

j. ORIENTAL Exterior Colored Finish shall be mixed with clean water only to proper application consistency.

XIII. APPLICATION OF FINISH COATS. Finish coat shall be applied over a partially dry, level and roughened gypsum base coat.

The finish coat shall be scratched in thoroughly and immediately doubled back to fill out to a true, even surface. Thickness should be no more than ⅛″. (Except Acoustical Plaster which shall be ½″ thick.")

a. Trowel finishes shall be water troweled during and after set to provide a smooth, dense surface for decoration, free of irregularities and blemishes.

b. Float finishes shall be floated with shingle, wood, carpet or rubber float to bring aggregate to the surface and produce a finish free of slick spots, cat faces, and other blemishes. In natural color finishes, use water sparingly while floating. Do not use water while floating colored finishes.

c. Textures shall be applied in such a manner that they will match the sample approved by the architect.

d. SABINITE Acoustical Plaster finish shall be (Trowel) (Float) applied according to manufacturer's directions which are hereby made a part of this specification.

e. HI-LITE Acoustical Plaster finish shall be (stipple-perforated) applied according to manufacturer's directions, which are hereby made a part of this specification.

f. RED TOP AUDICOTE Acoustical Plaster shall be applied using either hand or machine application methods. The finish shall be (Machine Textured) (Floated) (Trowelled) (Stipple-perforated), in accordance with manufacturer's directions which are hereby made a part of this specification.

g. Ornamental plaster shall be executed in accordance with the full-sized details shown on the drawings. Cornices and moldings shall be run full, straight and true with molding plaster, using clean cut metal templets conforming to the profiles shown on the drawings. Lines shall be in alignment, with true intersections, and accurate mitres at corners and angles. Enriched ornamental work which cannot be run in place shall be cast with casting plaster in gelatine molds. The work shall be solidly backed with jute or burlap, shall be properly reinforced with galvanized iron, and shall be securely stuck and wired in place with copper wires not lighter than 16 gauge. All joints shall be carefully made and neatly pointed so as to be invisible. All rough spots shall be eliminated with fine sandpaper, and the entire work left in proper condition, ready for decoration.

h. ORIENTAL Exterior colored finish shall be mixed and applied in strict accordance with the manufacturer's directions. Color and texture to be designated and approved by the architect or his representative.

XIV. PATCHING. Point up around trim and other work. Cut out and patch defective and damaged plaster. Patching of plaster shall match existing work in texture and finish and joinings with plaster previously applied shall finish flush and smooth.

XV. COMPLETION. At the completion of the finish plaster work, clean all plaster from beads, screeds, metal base and metal trim, leaving work ready for decoration by others. Remove all plaster rubbish from the building, leaving floors broom clean. Remove excess material from the job site. Remove all scaffolding, tools and other equipment from the building and job site.

"STRUCTO-LITE," "RED TOP," "BONDCRETE," "PYROBAR," "ROCKLATH," "ORIENTAL," "SABINITE," "IVORY," "GRAND PRIZE," "MORTASEAL," "CHESHIRE," "CHAMPION," "STAR," "BRACE-TITE" "TRUSSTEEL," "HI-LITE," "AUDICOTE" and "USG" are registered trade-marks; "STRUCTO-GAUGE" is a trade-mark owned by United States Gypsum and is used by it to distinguish products of its manufacture.

"STRUCTO-LITE" identifies the particular prepared plaster manufactured only by United States Gypsum.

"RED TOP" identifies the particular plasters and finishes manufactured only by United States Gypsum.

"BONDCRETE" identifies the particular plaster for concrete surfaces manufactured only by United States Gypsum.

"PYROBAR" identifies the particular gypsum partition tile manufactured only by United States Gypsum.

"ROCKLATH" identifies the particular gypsum lath or plaster base manufactured only by United States Gypsum.

"ORIENTAL" identifies the particular colored finishes manufactured only by United States Gypsum.

"SABINITE," "AUDICOTE" and "HI-LITE" identify the particular acoustical plasters manufactured only by the United States Gypsum Company.

"IVORY" and "GRAND PRIZE" identify the particular hydrated lime manufactured only by the United States Gypsum Company.

"CHESHIRE" identifies the particular high calcium finishing lime manufactured only by United States Gypsum.

"MORTASEAL" identifies the particular masonry lime manufactured by United States Gypsum.

"CHAMPION" and "STAR" identify the particular white gauging plasters manufactured only by the United States Gypsum Company.

"STRUCTO-GAUGE" identifies the particular prepared gauging plaster manufactured only by United States Gypsum.

"TRUSSTEEL" identifies the particular truss designed stud manufactured only by the United States Gypsum Company.

"BRACE-TITE" identifies the particular attachment clips manufactured only by the United States Gypsum Company.

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AIA File 10-D

TECHNICAL INFORMATION

PYROBAR*

GYPSUM PARTITION TILE

UNITED STATES GYPSUM

1959

*T.M. REG. U.S. PAT. OFF.

UNITED STATES GYPSUM

AIA File 10-D

PYROBAR*

GYPSUM PARTITION TILE

DESCRIPTION

PYROBAR is a precast gypsum partition tile. It is made in various thicknesses, both solid and hollow, with indented surfaces to receive plaster.

Sizes: 2" x 12" x 30" Solid
3" x 12" x 30" Hollow
4" x 12" x 30" Hollow
6" x 12" x 30" Hollow

Complies with ASTM Designation C52 and Federal Specification SS-T-316.

FUNCTION AND UTILITY

Fireproof—gypsum is incombustible and will not communicate high temperatures until completely calcined, a very slow process. Fire resistance ratings shown in technical data below.

Light Weight—saves structural steel—generally 30% to 50% lighter than other masonry partitions of like thickness. Unit weights shown in technical data below.

Plaster Bond—Authoritative tests show that gypsum plaster bonds to PYROBAR Partition Tile with factor of safety of 173.

Saves Plaster—the large size, machine moulded units lay accurately to a straight line. Grounds are ⅝".

Resistance to Sound Transmission—Increase of sound transmission loss is obtainable by furring one side of partition using USG Resilient Systems (See technical data below and AIA File No's 20-B and 20-B-2)

Low in Cost Because:
(a) Material cost is low.
(b) The large units (2½ sq. ft. surface area) lay into wall fast, thus reducing labor costs.
(c) Lightness in weight reduces labor costs.
(d) Fewer joints, saves mortar up to 40%.
(e) Ease of cutting reduces waste, and lowers cost of alterations or remodeling.
(f) Requires less plaster than other masonry units due to precision dimensions of moulded units.

LIMITATIONS OF USE

1. PYROBAR, although having a considerably higher compression strength than 75 lbs. per sq. inch gross area as required by ASTM Designation C52, is designed for non load-bearing partitions and should not be used for load bearing construction.
2. Portland cement and lime mortars do not bond adequately with PYROBAR and should not be used for erecting PYROBAR. Use RED TOP* Gypsum Cement Plaster for plastering and RED TOP Partition Tile Cement for mortar. See specifications.
3. For the reason given above, portland cement or line plasters should not be used over PYROBAR. Before applying portland cement bedding for ceramic tile, metal lath shall be nailed to PYROBAR. Alternately, other types of masonry, such as structural clay tile may be used as backing for ceramic tile.
4. 2" Solid PYROBAR shall not be used for partitions. Shall be used for furring and column fireproofing only.

TECHNICAL DATA

PARTITION	Thickness	Weight Per Square Foot (Pounds)	Limiting Height (Feet)	Fire Rating (Hours)*	Average Sound Transmission Loss* (Decibels)
3" Hollow Pyrobar—					
Unplastered	3 "	11.0	13	1	—
Plastered One Side	3⅝"	16	13	1½	—
Plastered Two Sides	4¼"	22	13	3†	39
4" Hollow Pyrobar—					
Plastered One Side	4⅝"	19	17	3	—
Plastered Two Sides	5¼"	24	17	4	43
6" Hollow Pyrobar—					
Plastered Two Sides	7¼"	33	30	5 (est.)	—
RESILIENT PARTITION					
3" Hollow Pyrobar— Plastered Two Sides One side furred with metal lath.	5¼"	23	13	—	46
3" Hollow Pyrobar— Plastered Two Sides One side furred with gypsum lath.	5⅜"	22	13	—	49
4" Hollow Pyrobar— Plastered Two Sides One Side furred with metal lath.	6¼"	26	17	—	50
COLUMN FIREPROOFING					
2" Solid— Plastered Exposed Side	2⅝"	16	—	4	
3" Hollow— Plastered Exposed Side	3⅝"	16	—	4	

*All tests made at nationally recognized testing laboratories. All ratings tabulated are based on Pyrobar laid in gypsum-sand mortar and plastered to ½" ground with gypsum-sand (1:3) plaster.

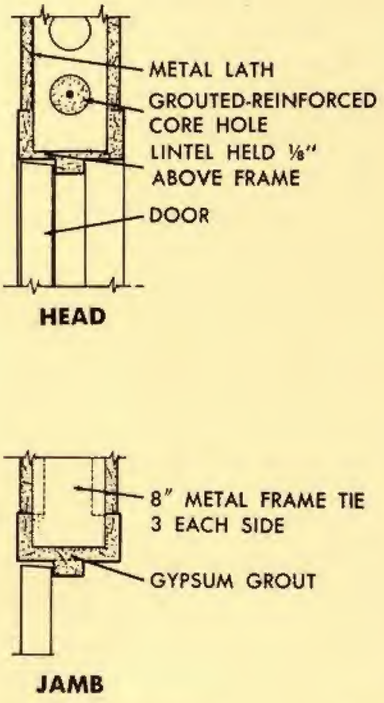
†3" Hollow Pyrobar laid in gypsum-perlite mortar and plastered (two sides) to ½" grounds with gypsum-perlite (100:3½) plaster had a Fire Endurance Time of 3 hours 55 minutes and passed a 4-hour Fire and Hose Stream Test.

"PYROBAR", "RED TOP" and "ROCKLATH" are registered trademarks owned by United States Gypsum, used by it to distinguish its products. "PYROBAR" identifies the particular gypsum tile, "RED TOP" identifies the particular gypsum cement plaster, "ROCKLATH" identifies the particular gypsum lath or plaster base, manufactured only by United States Gypsum.

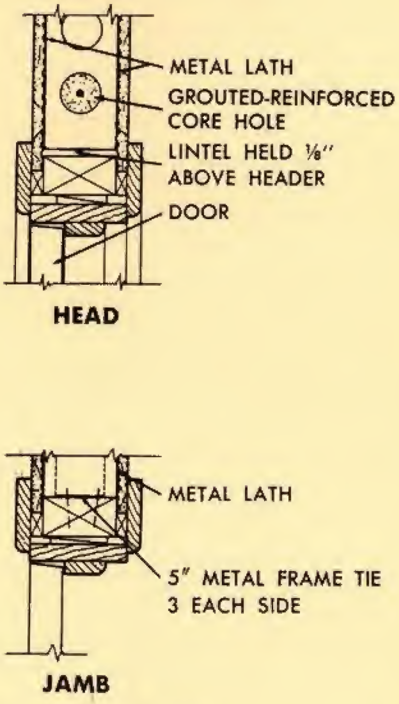
*T.M. REG. U.S. PAT. OFF.

DOOR FRAME AND FRAMED OPENING DETAILS

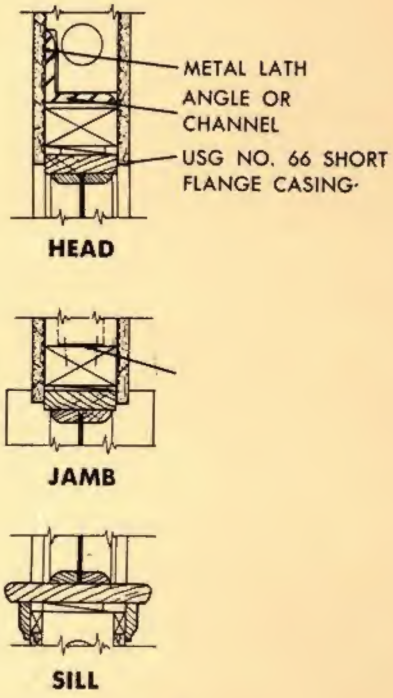
Scale 1½" = 1'- 0"


METAL LATH
GROUTED-REINFORCED CORE HOLE
LINTEL HELD ⅛" ABOVE FRAME
DOOR
HEAD
8" METAL FRAME TIE 3 EACH SIDE
GYPSUM GROUT
JAMB

METAL DOOR FRAME


METAL LATH
GROUTED-REINFORCED CORE HOLE
LINTEL HELD ⅛" ABOVE HEADER
DOOR
HEAD
METAL LATH
5" METAL FRAME TIE 3 EACH SIDE
JAMB

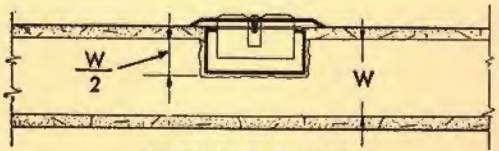
WOOD DOOR FRAME



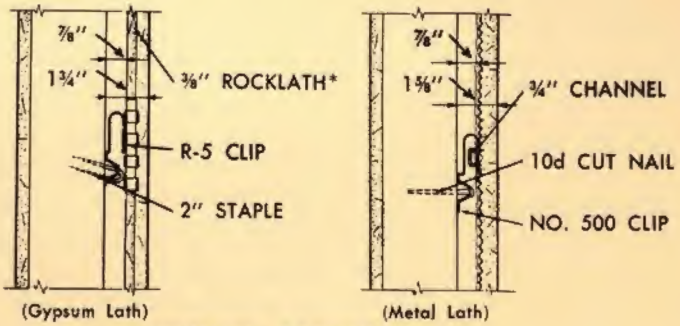
BORROWED LIGHT

MISCELLANEOUS—HORIZONTAL CROSS SECTIONS

Scale 1½" = 1'- 0"



CONDUIT CHASE



RESILIENT FACING

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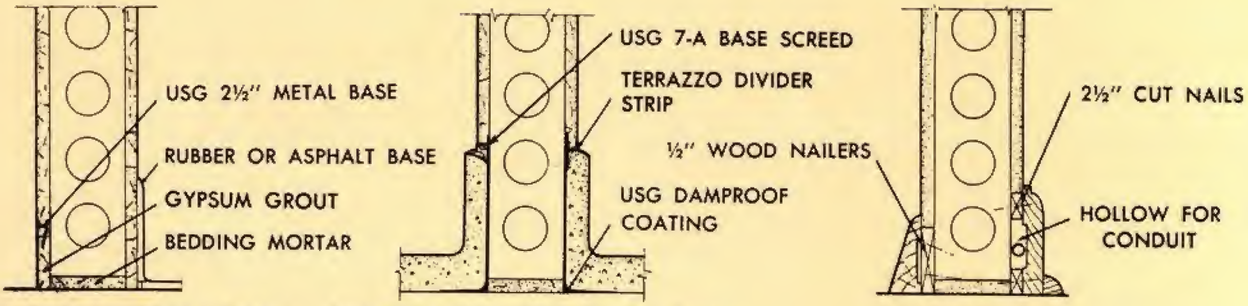
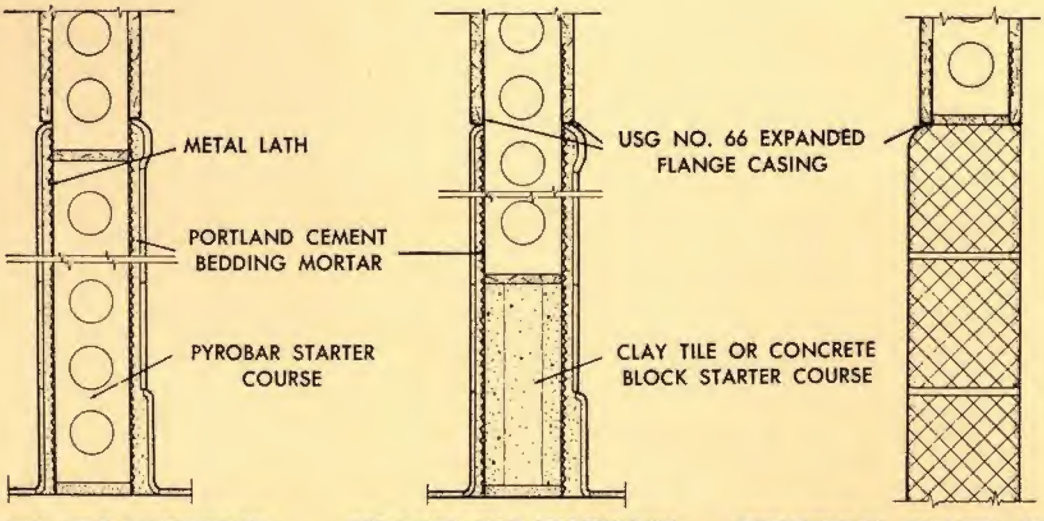
*T.M. REG. U.S. PAT. OFF.

FLOOR BASE AND TRIM DETAILS

Scale 1½" = 1'-0"



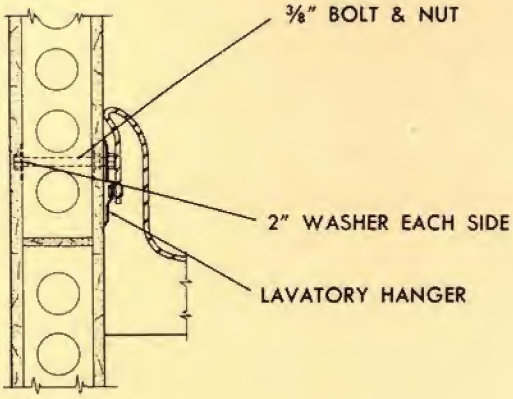
METAL AND RUBBER BASE **CEMENT AND TERRAZZO BASE** **WOOD BASE**


METAL LATH
PORTLAND CEMENT BEDDING MORTAR
PYROBAR STARTER COURSE
USG NO. 66 EXPANDED FLANGE CASING
CLAY TILE OR CONCRETE BLOCK STARTER COURSE

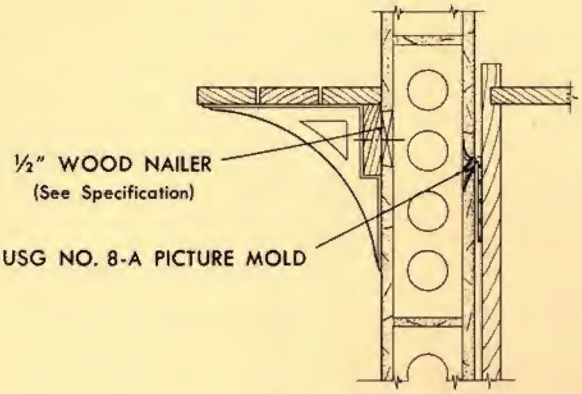
CERAMIC TILE WAINSCOT **CERAMIC TILE WAINSCOT** (Alternate) **STRUCTURAL GLAZED TILE WAINSCOT**

MISCELLANEOUS FIXTURE ATTACHMENTS

Scale 1½" = 1'-0"

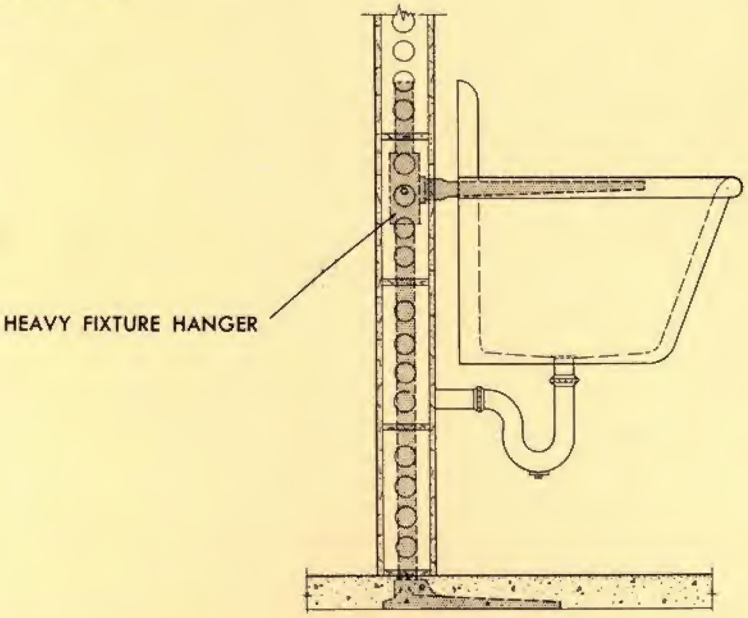


LAVATORY



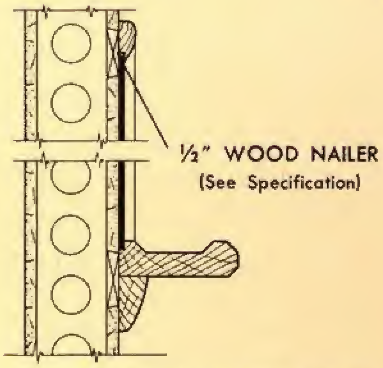
SHELF OR LIGHT CABINET

Scale ¾" = 1'-0"

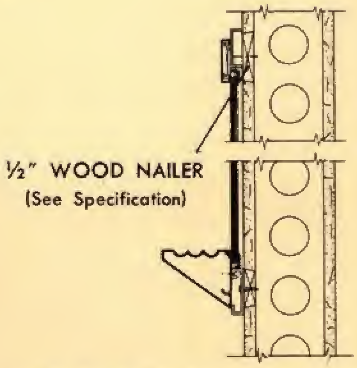


TYPICAL HEAVY FIXTURE
(Self-Supported)

Scale 1½" = 1'-0"



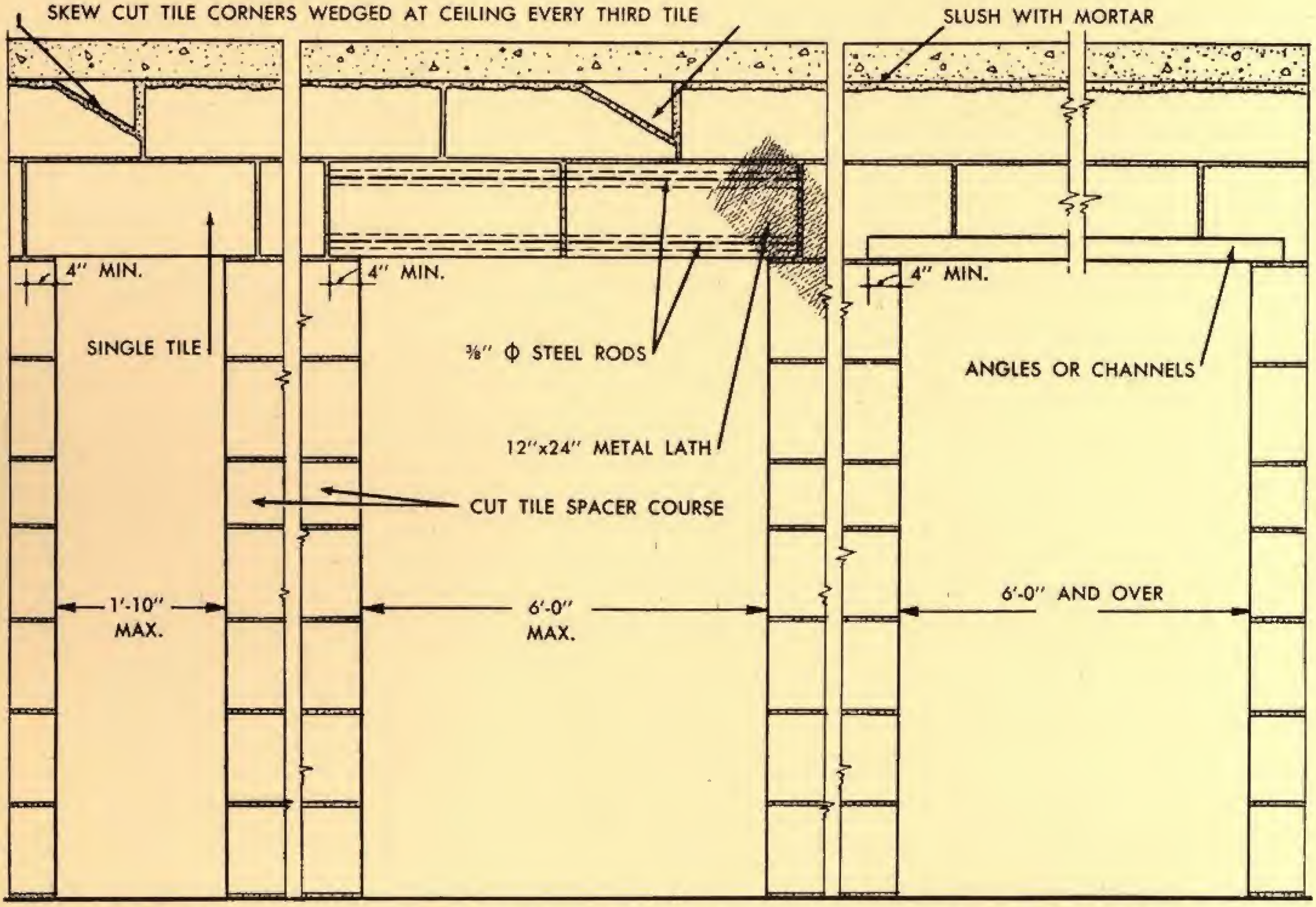
WOOD CHALKBOARD TRIM



METAL CHALKBOARD TRIM

LINTEL CONSTRUCTION

Scale ½" = 1'-0"



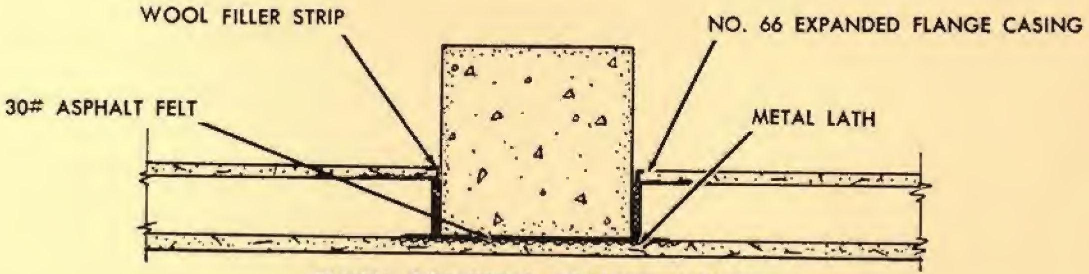
SINGLE TILE LINTEL · **REINFORCED GYPSUM TILE LINTEL** · **ANGLE OR CHANNEL LINTEL**

LINTEL CONSTRUCTION

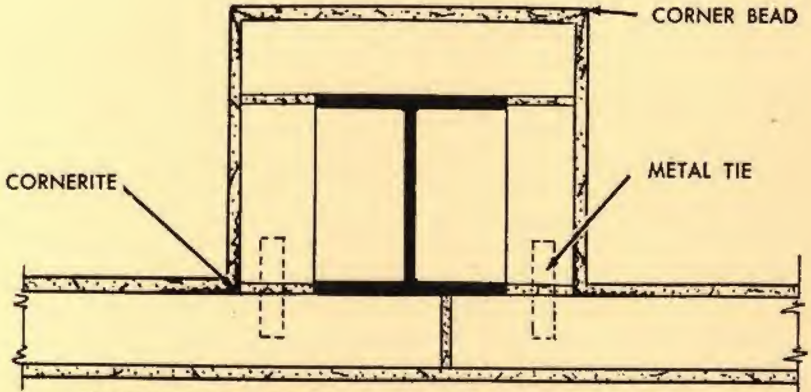
1. When lintels are constructed of a single gypsum tile (max. opening 1'-10") a minimum bearing of 4" must be provided at each side of opening. First course of tile above lintel must be staggered so vertical joint falls at midpoint of opening.
2. Gypsum tile lintels are constructed by filling the top and bottom core holes with gypsum mortar and reinforced with continuous ⅜" diameter steel rods.
3. For openings greater than 6'-0" a steel angle or channel of sufficient size must be used to form the lintel. Upstanding legs of channel or angle must be flush with face of gypsum tile and covered with metal lath if lintel is to be plastered.
4. Wedge top course of gypsum tile partition to construction above using skew cut corners every third tile.

COLUMNS

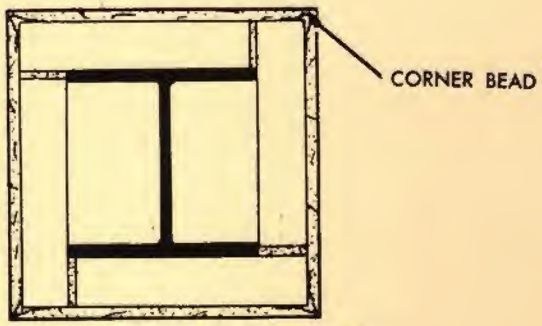
Scale 1½″ = 1′-0″



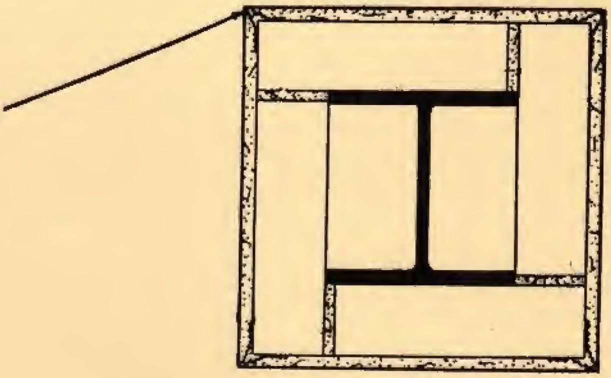
FLUSH CONCRETE COLUMN DETAIL



FIREPROOFED COLUMN AND ADJACENT PARTITION



COLUMN FIREPROOFING DETAIL
(2″ Solid Gypsum Tile)



COLUMN FIREPROOFING DETAIL
(3″ Hollow Gypsum Tile)

PYROBAR*
GYPSUM PARTITION TILE

SHORT FORM SPECIFICATION

Scope: Unless otherwise shown on plans, all partitions, including pipe chases, shafts, etc. shall be constructed of gypsum partition tile.

Materials:

Gypsum Partition Tile shall be Pyrobar, of sizes indicated as manufactured by United States Gypsum Company.

Cement for mortar shall be Red Top Partition Tile cement as manufactured by United States Gypsum Company.

Sand for mortar shall be clean and sharp, complying with ASTM Designation C35.

Erection:

Erection of Pyrobar tile shall be in accordance with current directions as printed by the U. S. Gypsum Company.

LONG FORM SPECIFICATION

Scope: Unless otherwise shown on plans, all partitions, including pipe chases, shafts, etc. shall be constructed of gypsum partition tile.

Materials:

Gypsum Partition Tile shall be Pyrobar, of sizes indicated, as made by United States Gypsum Company.

Cement for mortar shall be Red Top Partition Tile cement as made by United States Gypsum Company.

Sand for mortar shall be clean and sharp, complying with ASTM Designation C35.

Erection:

All mortar shall be mixed in proportions of 1 part Partition Tile Cement to 3 parts sand, by weight. Mortar shall not be retempered.

After door frames are erected and rough plumbing and wiring is in place, the first course shall be laid with core holes horizontal by bedding in mortar to a true and straight line according to partition layout as shown on plans. Succeeding courses shall be laid to a line in ½″ thick full mortar beds uniformly level in each course. Vertical joints shall be staggered and mortar in head joints shall be ½″ thick full joints. Cut all joints flush. Use of broken tile shall be kept to a minimum. Chinks and crevices shall be slushed full with mortar.

Partitions shall be well anchored to intersecting masonry walls 12½″ on center vertically with corrugated wall ties or 16d or 20d cut nails imbedded in mortar joints.

Wedge partition tightly at ceiling with skew cut tile corners every third tile. Slush mortar between tile and ceiling.

Pyrobar shall not be chased out more than half its thickness for conduit or other piping and size of such conduit and pipe shall be such that metal lath may be placed flush over the chase and secured in place.

Rough wood door frames shall be anchored to the Pyrobar with 16d cut nails or 5″ buck ties, three each side (approximately 12″ from top and bottom and at center) laid in the mortar joints. Lintel construction shall be held ⅛″ above head of frame and not slushed with mortar.

Steel door frames shall be anchored to the floor and to the Pyrobar with frame ties furnished by door frame manufacturer, minimum three each side (approximately 12″ from top and bottom and at center) laid in mortar joints. Space between tile and door frame jamb shall be slushed full with mortar as tile is laid into frame.

OPTIONAL INCLUSIONS

1. Lintels shall be formed as follows:

A. For openings up to 1′-10″ with a single gypsum tile providing at least 4″ bearing on each side of opening. First course of tile above lintel must be staggered so vertical joint falls at midpoint of opening.

B. For openings over 1′-10″ up to 6′-0″ with a gypsum tile lintel consisting of two or more full pieces of tile with top and bottom core holes filled with gypsum mortar and reinforced with continuous ⅜″ diameter steel rods.

C. For openings greater than 6′-0″ with a steel angle or channel of sufficient size to form the lintel. Upstanding legs of angle or channel must be flush with face of gypsum tile and covered with metal lath if lintel is to be plastered.

2. Lightweight Fixtures (shelves, cabinets, chalkboards, etc.) shall be attached to a ½″ wood nailer strip or USG No. 8-A, Picture mold which has been secured to Pyrobar wall (see detail). If ½″ wood nailer strips are used, these strips shall be nailed to vertical ¾″ x 12″ x tile width nailing blocks which are nailed to end of tile before setting tile in wall. Additional nails project into head joint from face of these vertical blocks (no detail shown).

3. Medium Weight Fixtures (lavatories, water closets, heavy shelves, etc.) shall be secured to Pyrobar partitions with ⅜″ steel bolts through the tile, using 2″ steel washers on both sides of tile. Set bolts in place before plastering.

4. Heavy Fixtures shall be supported by a steel angle grillage or commercial heavy fixture hangers built into the Pyrobar partition. (See detail.)

5. Wood Grounds for plastering shall be nailed into tile with 2½″ (8d) cut nails at base and around openings to provide a ⅝″ total thickness of plaster.

6. Base shall be:

A. USG 2½″ Metal Base secured to Pyrobar partition with USG masonry base clip (see detail).

B. Asphalt, rubber or vinyl tile applied with mastic to finished plaster (see detail).

C. Cement or terazzo base applied over metal lath secured to the first course of Pyrobar which has been coated with USG Dampproof coating from rough floor up to height of wet terrazzo (concrete) base. Care should be taken to get thorough application at joint of Pyrobar with rough floor (see detail).

D. Wood base (plain or hollow for conduit) shall be nailed to ½″ wood nailers secured to face of Pyrobar with 2½″ (8d) cut nails. (See detail.)

SPECIAL CONDITIONS

1. When columns or beams are located in line of partitions so that plane of plaster continues from the Pyrobar across the face of the columns or beams, cover face of columns or beams with 30# asphalt felt or equal membrane and cover this membrane with diamond mesh metal lath. Fasten metal lath to Pyrobar. Mineral wool filler strips shall be placed between ends of Pyrobar and columns (see detail).

2. Where partitions occur beneath constructions, where deflections downward of the construction are possible, provisions must be made at head of partitions for relief of transmitted loads.

3. Resilient Facings—Where resilient facings of metal lath or gypsum lath are to be used refer to USG AIA 20-B, 20B-2 Rocklath* plaster base, metal lath accessories for specifications and details.

4. Where a ceramic tile facing is to be applied to Pyrobar partitions nail metal lath to face of Pyrobar to full height of ceramic tile application for Portland Cement bed. Use USG 66 short or expanded flange casing at juncture of gypsum plaster and ceramic tile (see details).

5. 12″ x 24″ striplath shall be secured to the tile diagonally over corners of all openings.

6. 3″ x 3″ cornerite shall be used in all internal plastered corners except where Pyrobar partition abuts load bearing walls or partitions.

COLUMN FIREPROOFING

1. Pyrobar gypsum tile (2″ solid) (3″ Hollow) shall be laid plumb and true and corners built log cabin fashion with tile interlocking.

*T. M. Reg. U. S. Pat. Off.

TECHNICAL INFORMATION

ROCKLATH* PLASTER BASE METAL LATH & ACCESSORIES

PLASTER BASES
ATTACHMENT SYSTEMS
PARTITION CONSTRUCTIONS

UNITED STATES GYPSUM

1959

*T.M. Reg. U.S. Pat. Off.

UNITED
STATES
GYPSUM

LATHING AND PLASTERING BASES AND SYSTEMS

It is universally acknowledged that a completed plaster job can be no better than the base to which it is applied. The United States Gypsum Company produces a wide variety of lathing and plastering bases and systems designed to assure the best in plastered construction for a wide range of building types.

While metal lath has long been considered a standard of quality as a plastering base for work of a commercial or institutional nature, sound professional judgment also recognizes the use of ROCKLATH is often better suited for many conditions. For best plastering results, the use of both bases should be carefully considered, each assigned to those conditions it can best resolve.

This catalog is designed to assist the architect or builder in selection of these plaster bases, and systems for their support. The catalog outlines good practice for normal construction problems.

United States Gypsum maintains an architect's service department of specially trained personnel available for consultation on special problems or conditions.

Address: United States Gypsum Company
Architects Service Department
300 West Adams, Chicago 6, Illinois

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USG COLOR-RITE metal lath 31–36

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TYPES AND WEIGHTS OF METAL LATH AND SPACING OF SUPPORTS

Type of Lath	Weight	Type of Steel	Size Sheets	Maximum Allowable Spacings				
				Vertical Supports			Horizontal Supports	
				Wood	Metal		Wood or Concrete	Metal
	Per Square Yard				Solid Partitions	Others (5)		
Diamond Mesh	2.5 lb.	Copper Alloy (1)	27"x96"	16"	16"	12"	(4)	(4)
Diamond Mesh	3.4 lb.	Copper Alloy	27"x96"	16"	16"	16"	16"	13½"
Diamond Mesh	3.4 lb.	Galvanized (2)	27"x96"	16"	16"	16"	16"	13½"
⅛" Z-Rib	2.75 lb.	Copper Alloy	27"x96"	16"	16"	16"	16"	12"
⅛" Z-Rib	3.4 lb.	Copper Alloy	27"x96"	19"	24"	19"	19"	19"
⅜" Rib	3.4 lb.	Copper Alloy	27"x96"	24"		24"	24"	24"
⅜" Rib	4.0 lb.	Copper Alloy	27"x96"	24"		24"	24"	24"
Stuccomesh (3)	1.8 lb.	Copper Alloy	48"x99"	16" (3)				
Stuccomesh	3.6 lb.	Copper Alloy	48"x99"	16" (3)				
	Per Sq. Ft.							
¾" Riblath	0.60 lb.	Copper Alloy	2'x8'—					
	0.75 lb.	Copper Alloy	10' & 12'					

All metal lath (except galvanized) is painted with a rust-inhibitive black asphaltum paint.

Notes (1) Copper alloy lath contains from 0.2% to 0.25% pure copper.
(2) Galvanized lath is cut from galvanized sheets.
(3) Stuccomesh generally applied over exterior sheathing.
(4) Not recommended, except for fireproofing of steel shapes.
(5) Including vertical furring.

TECHNICAL DATA All tests made by nationally recognized laboratories

PARTITIONS

Type Base	Construction	Plaster and Aggregate	Approx. Weight Per Sq. Ft.	Nominal Over-All Partition Thickness	Fire Rating	Sound[6] Transmission Loss (db)
Expanded Metal	Wood Frame (2 x 4 Studs)	¾" Gypsum-Sand, 1:2, 1:3	18.1	5⅛"	45 Min.	
		¾" Gypsum-Sand, 1:2, 1:2	18.3	5⅛"	1 hour	39
		⅞" Gypsum-Sand, 1:2, 1:3	20	5⅜"	1 hour	39
		¾" Gypsum Wood Fiber		5⅛"	1½ hr.	
		¾" Gypsum-Vermiculite, 100:2½, 100:3½		5⅛"	1 hour	
	Solid	1½" Gypsum-Perlite, 100:2½, 100:2½	9.6	1½"	1 hour	34
		Gypsum-Perlite, 100:2, 100:3	11	2½"	2 hours	
		Gypsum-Sand, 1:2, 1:2	18.1	2"	1 hour	38
	TRUSSTEEL* Studs (Test data based on 3¼" stud. Total thickness of partitions will vary according to width of stud used.)	Gypsum-Sand, 1:2, 1:3	19.1	4¾"	45 Min.	
		Gypsum-Sand, 1:2, 1:2	19.2	4¾"	1 hour	40
		Gypsum-Sand, 1:2, 1:3	19.6	5"	1 hour	
		Gypsum Wood Fiber		5"	2 hours	
		Gypsum-Perlite, 100:2, 100:3		5¼"	2 hours	
		Gypsum-Sand 1:1, 1:2		5"	1½ hrs.	
	#400 Resilient Clips.	Gypsum-Sand, 1:2, 1:3	20	5¾"		55
⅜" Plain ROCKLATH*	Wood Frame (2 x 4 Studs)	Gypsum-Sand, 1:2, 1:2 ½" λ	†12.0	5⅜"	45 Min.	41
		Gypsum Wood Fiber ½" λ	†11.0	5⅜"	1 hour	
⅜" Perforated ROCKLATH	Wood Frame (2 x 4 Studs)	Gypsum-Sand, 1:2, 1:2 ½" λ	†12.0	5⅜"	1 hour	41
		Gypsum-Vermiculite, 100:2½ ½" λ		5⅜"	1 hour	
		Gypsum-Perlite, 100:2½ ½" λ		5⅜"	1 hour	
	TRUSSTEEL Studs	STRUCTO-LITE* ½" λ	9	5¼"	1 hour	44
		Gypsum-Sand, 1:2, 1:2 ½" λ	16	5¼"	1 hour	48
		Gypsum-Perlite, 100:2½ ½" λ	9	5¼"	1 hour	
	#400 Resilient Clips	Gypsum-Sand, 1:2, 1:3 ½" λ	17	6"		51
½" Long-length V-edge ROCKLATH	Solid	Gypsum-Sand, 1:1, 1:2	16	2"	1 hour	
		Gypsum-Sand, 1:2, 1:3	16	2"	45 Min.	37
		Gypsum-Perlite 100:2, 100:3	9	2"	1½ hours	37

CEILINGS

Expanded Metal Lath	Wood Frame (A)	Gypsum-Sand, 1:2, 1:3		¾" λ	1 hour
	Steel Joists (B)	Gypsum-Sand, 1:2, 1:3		¾" λ	2 hours
		Gypsum-Vermiculite, 100:2, 100:3		¾" λ	3 hours
		Gypsum Wood Fiber		1" λ	3 hours
		Gypsum-Vermiculite, 100:2, 100:3		1" λ	4 hours
	Cellular Steel Floor (C)	Structo-Lite		¾" λ	3 hours(N)
		Gypsum Wood Fiber		1" λ	4 hours
		Gypsum-Perlite, 100:2, 100:3		1" λ	4 hours
	Cellular Steel Floor (D)	Gypsum-Vermiculite, 100:2, 100:3		1" λ	4 hours
	Suspended Channel (E)	Structo-Lite		⅝" λ	3 hours
Perforated ROCKLATH (F)	Wood Frame	Gypsum-Sand, 1:2, 1:2 (G)		½" λ	1 hour
		Gypsum-Perlite, 100:2½		½" λ	1 hour
		Gypsum-Vermiculite, 100:2½		½" λ	1 hour
Perforated ROCKLATH (BRACE-TITE System)	Steel Joists, 2" Concrete Slab (H)	STRUCTO-LITE or Gypsum-Perlite, 100:2½ (H)		⅝" λ	1 hour
		STRUCTO-LITE or Gypsum-Perlite, 100:2½ (J)		½" λ	2 hours
		STRUCTO-LITE or Gypsum-Perlite, 100:2½ (K)		⅝" λ	3 hours
		Gypsum-Perlite, 100:2½ (L)		1" λ	4 hours

COLUMNS

Expanded Metal	Steel Section (M)	Gypsum-Sand, 1:2, 1:3		¾" λ	1 hour
		Gypsum-Perlite 100:2, 100:3		1" λ	2 hours
		Gypsum-Perlite, 100:2, 100:3		1⅜" λ	3 hours
		STRUCTO-LITE (Type "R")		1¾" λ	4 hours
⅜" Perf. ROCKLATH	Steel Section	Gypsum-Sand 1:2½		½" λ	1 hour
		Gypsum-Sand 1:2½		⅝" λ	1½ hours
		Gypsum-Perlite 100:2½		1" λ	2 hours
		Gypsum-Perlite 100:2, 100:3		1¾" λ	3 hours
½" Long length V-edge ROCKLATH	Steel Section	Gypsum-Perlite 100:2, 100:3		1½" λ	4 hours

λ Plaster thickness only. (Measured from face of lath.)

[6] Sound transmission tests made by recognized laboratories under laboratory conditions. Test results provide comparison of construction efficiencies.

† Approximate weight—lath and plaster only.

A Lath applied with 1½", 11 gauge, 7/16" head barbed roofing nails, 6" c. to c.

B 2½ reinforced concrete slab on Riblath or 2" precast gypsum tile above.

C Ceiling suspended 9" or more below floor slab.

D Ceiling suspended 3" or more below floor slab.

E incombustible construction above.

F Tongue and groove finished floor.

G Striplath applied to joists with ¾" nails having ½" heads.

H Channels 16" c. to c.

J Channels 16" c. to c. with supplementary 14 gauge diagonal wires.

K Channels 12" c. to c. with supplementary 14 gauge diagonal wires.

L Channels 12" c. to c. with supplementary 20 gauge hexagonal mesh stapled to ROCKLATH and wire-tied to the ¾-inch channels through the joints between laths.

M Self furring lath wrapped tight to column, or diamond mesh on channel framing.

N Protected steel beam—4 hours

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*T. M. Reg. U. S. Pat. Off.

ROCKLATH*
PLASTER BASES

DESCRIPTION

ROCKLATH plaster base is a gypsum lath made in sheet form providing a rigid base for the economical application of gypsum plasters. It is composed of a special gypsum core, faced on the sides and long edges with paper specifically manufactured for this purpose.

Complies with: ASTM Designation C37-50 and Fed. Spec. SS-P-431a

FUNCTION AND UTILITY

Fireproof—When used with gypsum plasters ROCKLATH plaster bases provide fire ratings as shown in the technical data tables.

Strength—Gypsum plaster adheres to ROCKLATH with a strong bond. A pull of 864 lbs. per sq. ft. is required to separate the plaster from the lath, providing a safety factor of 144. The large sheets when plastered add appreciable distortion resistance to the frame.

Durability—Gypsum is a mineral not affected by time, decay, dry rot or normal humidity conditions. Does not attract vermin.

Economy—ROCKLATH is low in cost, has general market acceptance, is quickly and easily applied and permits substantial savings in plastering materials and labor.

Resistance to Sound Transmission—ROCKLATH and plaster used in conjunction with partition assemblies and USG* attachment systems provide substantial resistance to sound transmission. (See Technical Data)

LIMITATIONS OF USE

1. Not recommended for use as a plaster base for portland cement or lime plasters.

2. ⅜″ ROCKLATH is designed for supports not to exceed 16″ on centers. For spacings greater than 16″ and not more than 24″, ½″ ROCKLATH should be used.

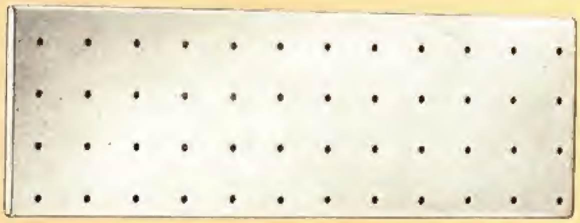
3. Where ⅜″ ROCKLATH is used in conjunction with resilient clips (supported at long edges only) or where ½″ ROCKLATH is used on supports exceeding 16 inches o.c., three coat plaster application is recommended to eliminate the possibility of sagging during plastering.

4. Where lath and plaster ceilings are located under roof construction, it is recommended that the space thus established be ventilated. Such ventilation, with or without vapor barrier and insulation, shall be designed in accordance with good engineering practice.

5. ROCKLATH plaster base should not be used where exposed to excessive moisture or humidity.

6. Fire Ratings shown in Technical Data Tables apply only for types, thickness and combinations listed.

TYPES



THERMAL RESISTANCE (R) OF INSULATING ROCKLATH
(½″ OF PLASTER AND FACING AIR SPACE ¾″ OR MORE)
ALL FIGURES BASED ON ASHVE GUIDE

Direction of Heat Flow	Thickness Insulating ROCKLATH ⅜″	Thickness Insulating ROCKLATH ½″
Downward—Coefficients for ceiling and sloping surfaces—summer conditions.	6.93	7.01
Upward—Coefficients for ceiling and sloping surfaces—winter conditions.	2.59	2.67
Horizontal—These coefficients for walls under summer or winter conditions.	2.59	2.67

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*T.M. Reg. U.S. Pat. Off.

PLAIN ROCKLATH

Recommended for nail-on application to wood and nailable steel framing and for clip attachment to wood framing, steel studs and suspended metal grillage.

Size: 16 x 48 inches, ⅜ or ½ inch thick.

(Also made 16⅕ inches wide for Pacific Coast area)

PERFORATED ROCKLATH

Perforated ROCKLATH is identical in all respects with plain Rocklath plaster base except ¾ inch round holes are punched through the lath 4 inches on center in each direction, one ¾" diameter hole for each 16 sq. in. of lath area. This provides, in addition to the natural plaster bond, a mechanical key. Higher fire ratings are obtained by the use of perforated ROCKLATH and gypsum plaster. (See Technical Data Tables, page 3.)

Perforated ROCKLATH plaster base is not recommended for attachment to ceilings, either wood framing or metal grillage, where the only support provided is by clips at edges.

INSULATING ROCKLATH

Insulating ROCKLATH provides all the advantages of plain ROCKLATH as a rigid plaster base, and is manufactured in the same sizes. Bright aluminum foil is laminated to the back of plain ROCKLATH providing an effective vapor barrier at no additional labor cost.

Insulation—When properly installed with at least a ¾ inch air space next to the foil, insulating ROCKLATH provides positive insulation having a resistance of 2.59. When used on horizontal surfaces, for retarding the downward flow of heat, its insulating value is about three times greater. (See Thermal Resistance Chart.) Tests and field observations over an extended number of years show that, in normal use, there has been insufficient corrosion of the foil to harm the insulating and vapor barrier characteristics of insulating ROCKLATH. The effect of dust on insulating ROCKLATH in a vertical position is negligible. A greater than normal dust deposit accumulation on insulating ROCKLATH in a horizontal position is required to seriously affect its insulating characteristics.

Economy—Labor costs for application of insulating ROCKLATH plaster base are no more than for plain or perforated ROCKLATH.

LONG LENGTH ROCKLATH PLASTER BASE

Long Length ROCKLATH is manufactured ½" thick, 24" wide, mill cut to ceiling high lengths as required up to 12 feet, and is formed with longitudinal "V" edges.

It is designed primarily for use as a plaster base in 2" solid ROCKLATH and plaster partitions. (See 2" Solid ROCKLATH and Plaster Partition Section for Details.)

LONG LENGTH INSULATING ROCKLATH

Long Length Insulating ROCKLATH is manufactured ⅜" thick, 24" wide with square edges, and mill cut to ceiling high lengths, as required, with bright aluminum foil laminated to the back side.

Designed primarily for furring exterior masonry wall construction. (See Section on USG Exterior Wall Furring System.)

VAPOR BARRIERS

Vapor Barrier—The insulating ROCKLATH applied to the inside face of all exterior walls and top floor ceilings provides an effective vapor barrier to help safeguard against harmful condensation within such spaces. Since aluminum foil is one of the best vapor barriers known and used commercially, F.H.A. allows (at the discretion of local offices) the use of insulating ROCKLATH with blowing wool in frame walls, ceilings or roofs.

When the atmospheric conditions indicated in the accompanying chart are of considerable duration, the amount of condensation in the "Conventional Wall" is sufficient to damage the interior decoration, exterior paint, or any of the other wall components. In the "Vapor Barrier Wall," however, the quantity of condensate is so minor as to be readily dissipated.

RECOMMENDATIONS

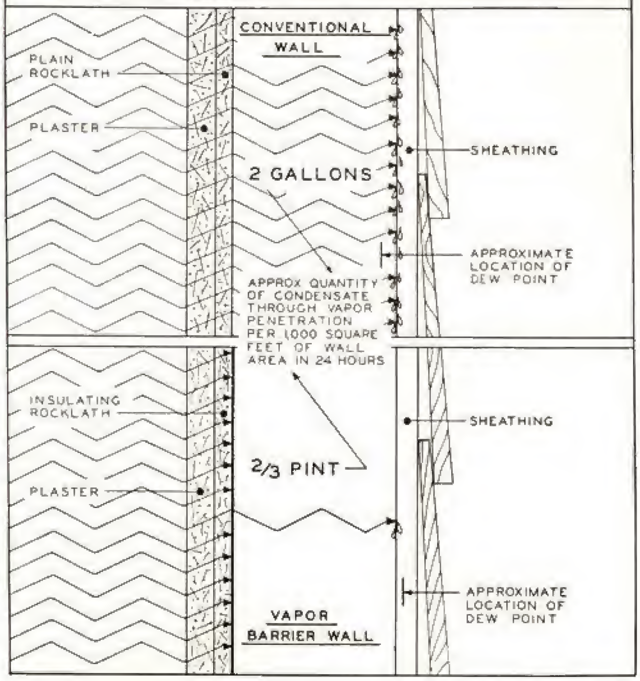
1. An efficient vapor barrier should be installed in all exterior walls and ceilings in locations where below freezing weather occurs for extended periods of time.
2. Vapor barrier should be located on the warm side of the exterior wall or top floor ceiling.
3. Vapor barrier should have a vapor permeability of not more than 1.00 perms. (Grains per square foot per hour per inch of mercury vapor pressure difference.)

TECHNICAL DATA

Tests at a nationally recognized testing laboratory gave an average permeability for Insulating ROCKLATH and ½ inch gypsum plaster applied to wood studs in the normal manner of 0.67 perms.

ILLUSTRATION OF IMPORTANCE OF VAPOR BARRIER

INSIDE ATMOSPHERE		OUTSIDE ATMOSPHERE
70°F	TEMPERATURE	10°F
45%	RELATIVE HUMIDITY	90%
3.63	GRAINS MOISTURE PER CU. FT.	0.69
0.332 IN.HG.	RESULTANT VAPOR PRESSURE	0.067 IN.HG.


CONVENTIONAL WALL
PLAIN ROCKLATH
PLASTER
SHEATHING
2 GALLONS
APPROXIMATE LOCATION OF DEW POINT
APPROX QUANTITY OF CONDENSATE THROUGH VAPOR PENETRATION PER 1,000 SQUARE FEET OF WALL AREA IN 24 HOURS
INSULATING ROCKLATH
SHEATHING
2/3 PINT
PLASTER
APPROXIMATE LOCATION OF DEW POINT
VAPOR BARRIER WALL

USG COLOR-RITE
METAL LATH

DESCRIPTION

Metal lath is sheet steel that has been slit and expanded to form a multitude of small mesh openings.

It is made from rust-resisting copper alloy steel and is further protected by dipping the expanded sheet into black asphaltum paint. (Exception: 3.4 lb. diamond mesh when made from galvanized sheets.) For sizes and weights—See Technical Data page 2.

USG COLOR-RITE METAL LATH represents the newest development in the metal lath industry. Ends of bundles are spray painted ***red*** for all 3.4 lb. lath, ***white*** for 2.5 lb. diamond mesh and 2.75 lb. Z-rib, ***yellow*** for 4.0 lb. 3/8" riblath. This makes warehousing, inventory and job distribution easier and ***positive***. An architect may quickly and ***visually*** inspect a job to make sure the weight lath he specified is used.

FUNCTION AND UTILITY

Metal lath is primarily used as a plaster base. Certain types are used as centering lath for poured concrete.

Fire Resistant—Metal lath and gypsum plaster provide the fire ratings shown on page 3.

Strength and Reinforcing—Metal lath embedded within the plaster thickness provides tensile strength in a manner similar to steel reinforcement in concrete slabs, thus providing unusually high resistance to transverse impact. It decreases the hazards of cracks and failures due to structural movement of the frame.

Flexible—Metal lath is readily shaped to ornamental contours to a degree not possible with other plaster bases.

Quality Plastering—The use of metal lath as a plaster base is conducive to good plastering because oversanding in the scratch coat and thin applications of basecoat are impractical.

Long Range Economy—Metal lath is intended for highest quality, fire resistant, durable plastering with low maintenance costs.

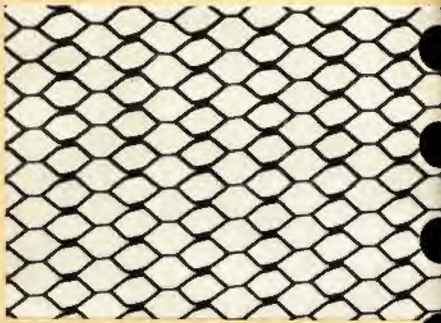
LIMITATIONS OF USE

1. The minimum weights of lath for spacing of supports listed in Technical Data on page 2 must be observed.
2. The securing of metal lath to supports should be in accordance with the specifications printed herein.
3. If sand is used for plastering, it must be clean. Unwashed salt water sand should not be used.
4. When abnormally high humidity, moisture, acid fumes or unusual job conditions are anticipated, refer to USG Architect Service representative.
5. When contact, furred or suspended ceilings are used under roof construction, the space between ceiling and roof shall be vented in accordance with good engineering practice.

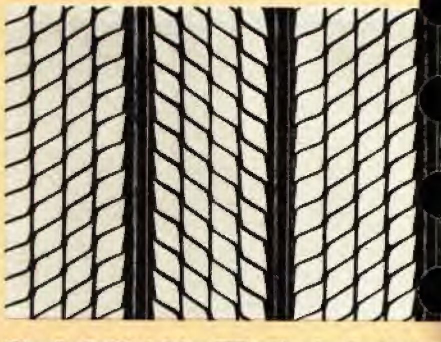
CAUTION—Failure to observe these limitations may result in failure.

types

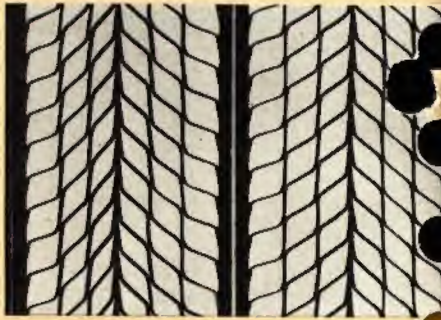
USG Junior Diamond Mesh Lath



USG 4-Mesh Z-Riblath



USG 3/8" Riblath



USG 3/4" Riblath

USG Expanded Metal Stucco Mesh

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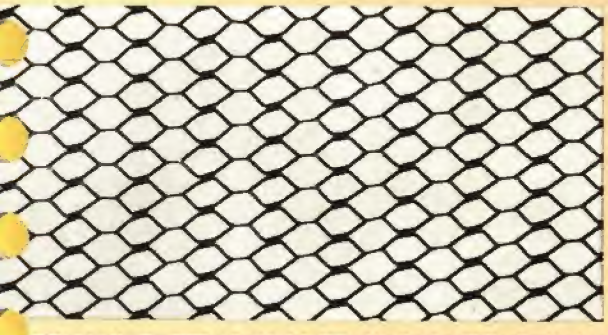
*T.M. Reg. U.S. Pat. Off.



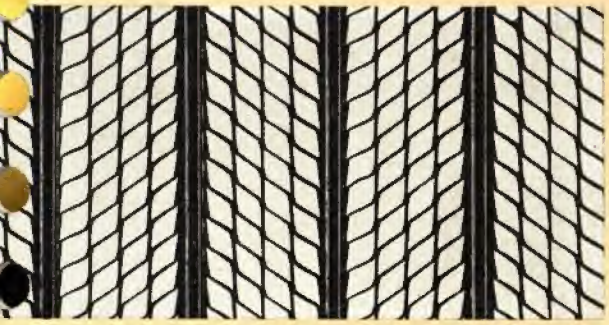
USG JUNIOR DIAMOND MESH LATH

A small diamond mesh metal plaster base (approximately 11,000 meshes per yard).

A general all-purpose lath. Best for ornamental, contour plastering. The small meshes conserve plaster and reduce droppings. Nationally available. Also available in self-furring type having ¼″ "dimple" indentations spaced 1½″ o.c. each way for use as exterior stucco base column fireproofing and for replastering over old surfaces.

Size: 27″ x 96″.

Weights: 2.5 lbs. ***(End Painted White)*** and 3.4 lbs. ***(End Painted Red)*** per sq. yd.



USG 4-MESH Z-RIBLATH

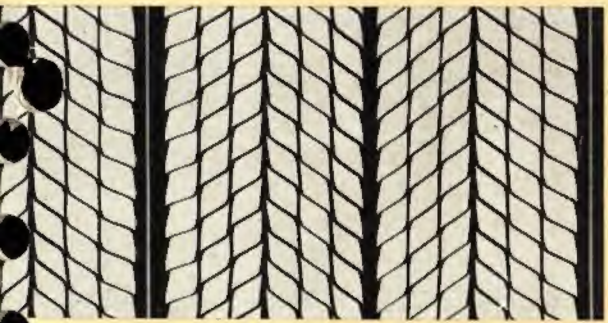
A "flat rib" type of lath with smaller mesh openings. Suitable for "double-up" type of plasterings. An excellent nail-on lath, or for tie-on work on flat ceilings.

Size: 27″ x 96″.

Weights: 2.75 lbs. ***(End Painted White)*** and 3.4 lbs. ***(End Painted Red)*** per sq. yd.

Limitations of Use

Use Diamond Mesh lath for contour plastering.



USG ⅜″ RIBLATH

A herringbone mesh pattern with ⅜″ V-shaped ribs running lengthwise of the sheet at 4½″ intervals, with inverted intermediate 3⁄16″ ribs.

The heavy ribs provide exceptional rigidity. Used when supports are spaced more than 16″ o.c. and not more than 24″ o.c. and for 2″ solid studless metal lath and plaster partitions. Used as a centering lath for concrete floor and roof slabs.

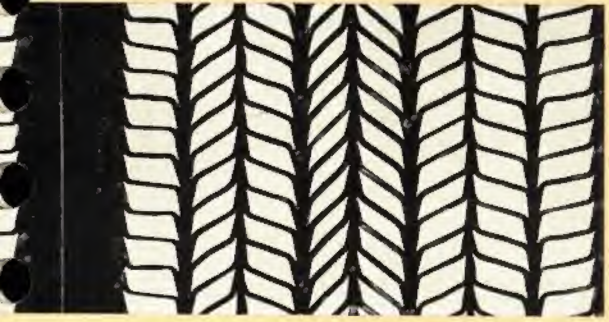
Size: 27″ x 96″. (Other lengths available.)

Weights: 3.4 lbs. ***(End Painted Red)*** and 4.0 lbs. ***(End Painted Yellow)*** per square yard.

Limitations of Use

Its extreme rigidity makes ⅜″ Riblath unsuitable for contour plastering. Use Diamond Mesh Lath.

Due to ⅜″ rib, minimum ground thickness must be 1″.



USG ¾″ RIBLATH

A herringbone mesh pattern with ¾″ deep V-shaped ribs lengthwise of the lath at 6″ intervals.

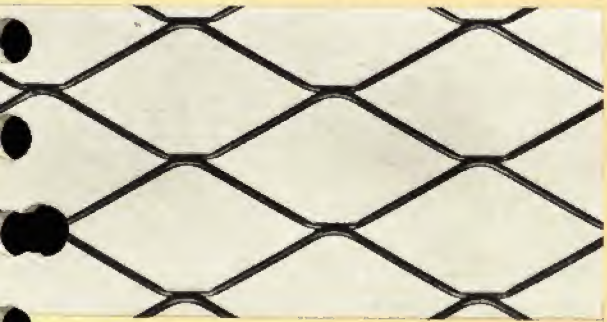
A structural lath, providing the dual functions of centering and reinforcement for concrete floor and roof slabs.

Sizes: 2′ x 8′, 2′ x 10′ and 2′ x 12′.

Weights: .60 lb. and .75 lb. per square foot.

Limitations of Use

Not recommended as a plastering lath.



USG EXPANDED METAL STUCCO MESH

A 1⅜″ x 3⅛″ diamond mesh pattern made of copper alloy steel, asphaltum painted. Designed as a base for exterior stucco, hand or pump applied.

Size: 48″ x 96″.

Weights: 1.8 lbs. and 3.6 lbs. per sq. yd.

Limitations of Use

Should be applied with 1½″ galvanized self-furring nails.

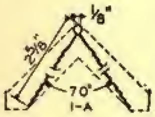
When used over sheathing other than wood, fasten with longer nails, providing a minimum penetration of 1⅛″ into studs.

USG CORNER BEADS

USG corner beads should be used on all external plaster angles to provide: (1) plaster protection, (2) true and straight lines at angles and (3) grounds for plastering.
Lengths: 7′, 8′, 9′, 10′ and 12′. Gauge of Steel: 26 gauge galvanized.

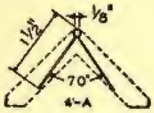
1-A EXPANDED CORNER BEAD

Its wide expanded flanges are easily flexed. Preferred for irregular corners. Provides increased reinforcement close to nose of bead.



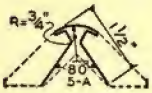
4-A FLEXIBLE CORNER BEAD

The general purpose corner bead. Economical and most generally used. By snipping flanges, this bead may be bent to any curved design (for archways, telephone niches, etc.). Can be secured to corners with 9-A Corner Bead clip attached to flanges.



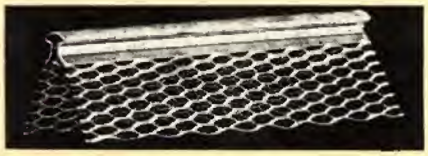
5-A BULL NOSE CORNER BEAD

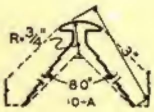
A ¾″ radius bull nose bead with short flange. Used for rounded corners. Can be secured with No. 9-A Corner Bead Clips attached to flanges, where wide nailing flanges are required.



10-A EXPANDED BULL NOSE CORNER BEAD

A bull nose bead similar to above, but with 2½″ wide expanded flanges. Especially suitable on irregular corners.

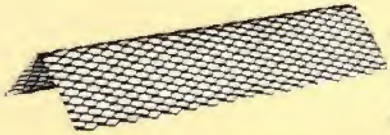


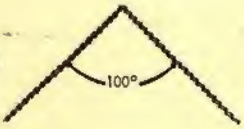


USG SELV-EDGE CORNERITE AND STRIPLATH

Cornerite is a strip of copper alloy, painted, Diamond Mesh lath, bent lengthwise in the center, to form a 100° angle. Cornerite should be used in all internal plaster angles as reinforcement where metal lath is not lapped or carried around; over non-ferrous lath anchored to the lath; over internal angles of masonry constructions. (Cornerite is optional in Resilient, BRID-JOINT* lathing system. If used, it is secured to the lath, not the supports.)
SIZES: 2″x 2″ x 96″—3″ x 3″ x 96″.

Striplath is a strip of Diamond Mesh lath, copper alloy, painted—used as a plaster reinforcement over joints of non-metallic lathing bases and where dissimilar bases join.
SIZES: 4″ x 96″—6″ x 96″.



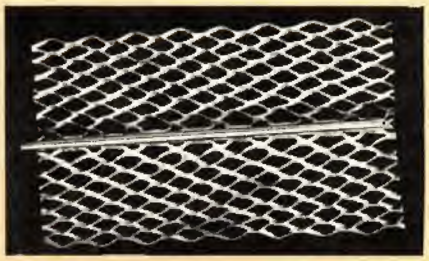


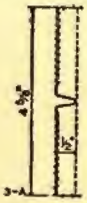
USG SCREEDS

USG Screeds are used to divide different types of plaster finishes and as a separation between plaster and a cement base. Lengths: 10′-0″. Gauge of steel: 26-gauge galvanized steel.

3-A EXPANDED BASE SCREED

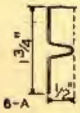
A flush type ½″ ground (job shimmed for ¾″ grounds) with wide flexible expanded flanges for added reinforcement. Used as a dividing strip between plaster and flush portland cement base.





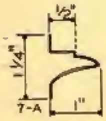
6-A PLAIN BASE SCREED

A flush type ½″ ground (job shimmed for ¾″ grounds), used as a straight divider strip between different types plaster, as between gypsum and portland cement.



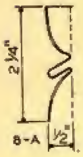
7-A CURVED POINT BASE SCREED

A dividing strip for use between plaster surface and projecting portland cement base. Upper ground is ½″, bottom ground is 1″.



8-A PICTURE MOULD

A concealed mould. Attached to lath and plastered flush to the notch opening. Grounds ½″ (job shimmed for ¾″ grounds).



*T.M. Reg. U.S. Pat. Off.

USG CASING BEADS

USG Casing Beads are used as a plaster stop and trim around window and door openings.

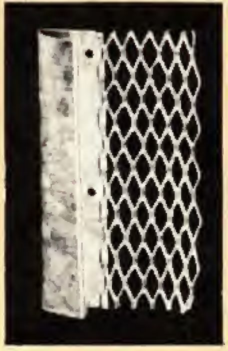
Casing Bead	Style	Flange	Gauge	Grounds
4	Quarter Rd.	Expanded	24	(½", ¾)
138	Quarter Rd.	Short	24	(½", ¾, ⅞)
60	Semi-Square	Expanded	24	(½", ¾)
		Short	22	(½", ¾, ⅞)
66	Square	Expanded	24	(½", ¾)
		Short	22	(½", ¾, ⅞)

All casings are furnished in 7′, 8′ and 10′ lengths of galvanized steel for use with metal lath, ROCKLATH or masonry construction.

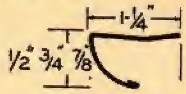
Caution—In order to insure proper grounds for plastering, ¾" casing beads are recommended for use in conjunction with metal lath, clay tile or brick: ⅞" casing beads are recommended *when the flange is applied under* ROCKLATH plaster base.

½" casing beads are recommended *when flange is applied over* ROCKLATH.

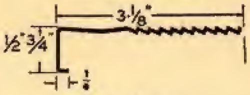
METAL DOOR AND WINDOW CASING BEADS


No. 4—Expanded flange

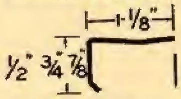
No. 66—Short flange



No. 138—Quarter Round (Short flange type)



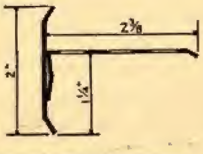
No 66—Square (Expanded flange type)



No. 60—Semi-Square (Short flange type)

USG 2" PARTITION TERMINAL

For use as a vertical parition terminal for 2" solid metal lath or ROCKLATH partitions, or as a ceiling runner where 2" partitions join an unplastered surface. Cap is formed of 18 gauge steel welded to a 24 gauge punched runner. Standard length 8′-2" and prime coated.

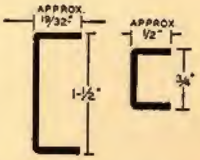


USG LATHING CHANNELS

USG Lathing Channels are cold rolled from 16-gauge steel, black asphaltum painted; used for furring, suspended ceilings, partitions, and ornamental lathing.

Lengths: 16′ or 20′

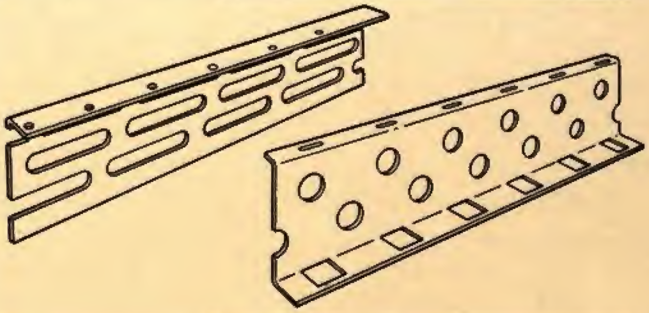
Weights: ¾"—300 lbs. per M Lin. Ft.
1½"—514 lbs. per M Lin. Ft.
2"—625 lbs. per M Lin. Ft.



USG CEILING RUNNERS

L-Type—A specially designed ceiling runner providing top anchorage for studless metal lath or ROCKLATH solid plaster partitions.

Z-Type—A specially designed ceiling runner providing positive anchorage and alignment of ¾" channels in either solid partition construction or exterior wall furring.

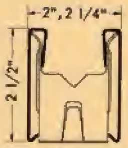


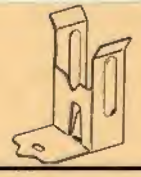
USG METAL BASE

A flush, metal base system consisting of a 2½" high face plate formed from 18-gauge steel, primed with a rust inhibitive paint, adaptable to all plaster partitions or furred exterior walls by the use of specially formed steel clips.

The cross section as designed provides a strong, rugged base. Substantial installation economies effected by the feature mounting snap-on application to the double base clip used in "2" solid plaster partition or to the single base clip and stud base clip used with hollow partitions or furred walls.

The face plates are easily notched and bent to form inside and outside corners, and are butted and spliced for continuous uninterrupted runs from one type of wall construction to another.





*Trademarks Reg. U. S. Pat. Off.

LATHING ACCESSORIES

BRIDJOINT* CLIPS

Specially formed steel clips designed to provide a rigid alignment of gypsum lath where ends of lath do not fall at or on structural members.

BRIDJOINT Clip B-1

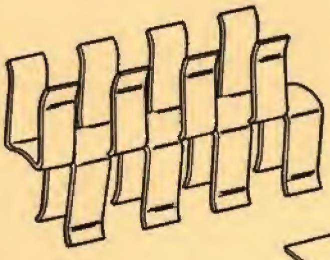
Field clip for 3/8″ ROCKLATH to support end joints of lath. Also manufactured for use with 1/2″ ROCKLATH.

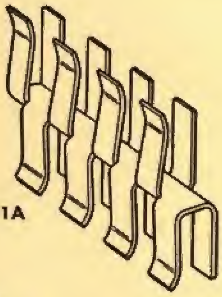
BRIDJOINT Clip B-1A

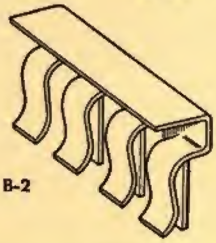
Field clip for 3/8″ ROCKLATH to support end joints where acoustical tile is to be adhesively applied to the face of the lath. Tile side of clip has flat prongs.

BRIDJOINT Clip B-2

Used in conjunction with B-1 clips to eliminate nailing in corners and angles. For 3/8″ ROCKLATH only.


B-1


B-1A


B-2

BRACE-TITE* Clips

Special wire clips for attaching ROCKLATH plaster base to metal grillages of 3/4″ cold rolled channels or TRUSSTEEL* Studs when spaced not over 16″ o.c.

BRACE-TITE Field Clip BT-1

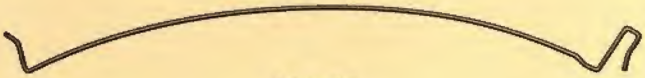
Used for suspended ceilings, exterior wall and beam furring and hollow pipe chase partitions. Designed to provide support across the full width of the lath and has spring action to increase rigidity. Designed for use only with standard 3/4″ cold rolled channels having 1/2″ legs (minimum). Not for use with hot rolled channels.

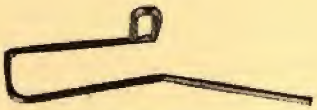
BRACE-TITE Starter Clip BT-1

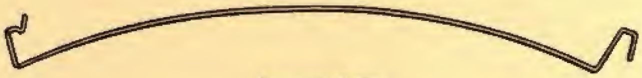
Used in conjunction with BT-1 field clip to start first course of lath.

BRACE-TITE Acoustical Clip BT-A

Used for suspended ceilings with adhesive attachment of acoustical tile. Designed to provide support across the full width of the lath and not interfere with alignment of the tile.


Field Clip


Starter Clip


Acoustical Clip

TRUS-LOK* Field Clip TL-1

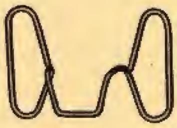
For attaching ROCKLATH plaster base to TRUSSTEEL Studs.

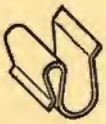
TRUS-LOK Starter Clip TL-2

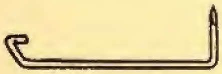
Used in conjunction with TL-1 clips to start first course of lath.

TRUS-LOK Finisher Clip TL-3

Used in conjunction with Trus-Lok TL-1 Clips and metal runner to finish top course of lath.

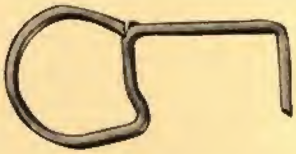

TL-1


TL-2


TL-3

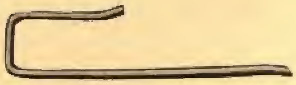
USG BRACING CLIP

For attaching 3/4″ channels to 1/2″ long length ROCKLATH as temporary braces in 2″ solid ROCKLATH and plaster partition construction.



CEILING RUNNER CLIPS

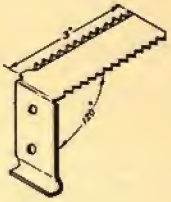
Used for attaching 1/2″ long length ROCKLATH to "L" shaped ceiling runner.



*T.M. Reg. U. S. Pat. Off.

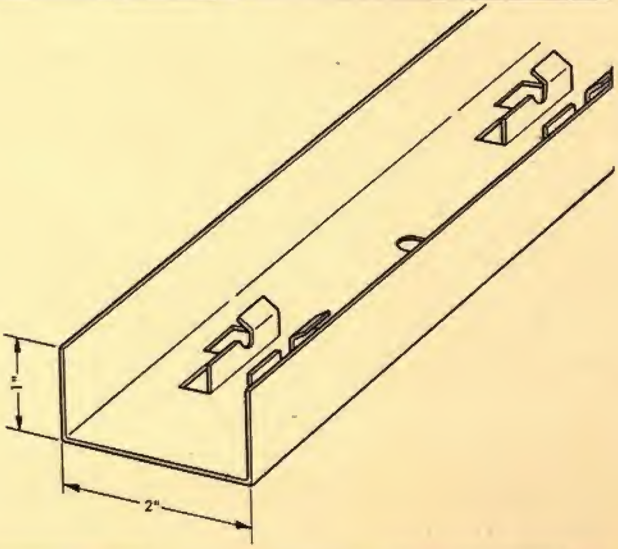
ADJUSTABLE WALL FURRING BRACKET

Made of 20 gauge galvanized steel with serrated edges for attaching ¾″ furring channels to exterior masonry walls.



USG FLOOR RUNNER AND SCREED

A one-piece, channel-type combination floor runner and screed used to anchor 2″ solid lath and plaster partitions to concrete floors with a minimum of labor. Can be cut with a hack saw or tin snips. Fastens to floor with concrete stub nails, rawl drives, or other suitable means. Base requires no grouting, except with studless metal lath partitions. One-inch legs provide an excellent ground establishing the 2″ thickness of the partition. Designed to be covered with asphalt or rubber base. Fireproof and economical, it's made of 20-gauge cold rolled steel painted black. 10′ lengths. Weight, 500 lbs. per 1,000 lineal feet. Packaged 100 lineal feet per bundle.



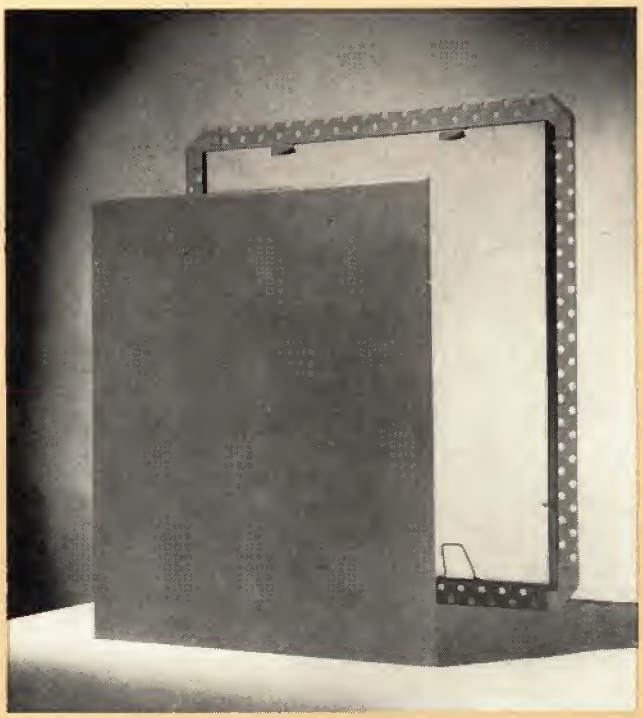
USG STEEL ACCESS PANELS

U.S.G. Steel Access Panels provide speedy and convenient access to key service points for plumbing, heating, electrical and air conditioning systems. They eliminate costly cutting into walls and ceilings for inspection and maintenance of equipment. Ideal, too, for turning enclosed areas into valuable extra storage space.

Adaptable—can be used with walls and ceilings of metal lath or gypsum lath and plaster; gypsum wallboard; or, other wall and ceiling construction materials.

Ready to install
- No cutting or sawing
- Made of steel: will not rot, warp, shrink or swell
- Fire-resistant
- Factory-coated with rust-inhibitive primer
- Fit snugly with finished surfaces
- Vermin-proof

Packed 2 to a carton, complete installation directions included. Four practical sizes: 8″x8″, 12″x12″, 14″x20″, and 22″x24″.



USG RESILIENT LATHING SYSTEMS

USG Resilient Clips are specially formed to provide a non-rigid or floating attachment of ⅜" ROCKLATH plaster bases to the structural frame, affording:
1. Increased protection against plaster cracking due to structural movement.
2. Increased sound transmission loss through the resilient attachment.

Resilient Clip R-1

For wood studs or joists spaced 16" o.c. attached by nailing with 13 gauge, 1⅛" lathing nail. ROCKLATH is floated ⅜" free of framing members and held in place by the prongs of the clip.

Resilient Clip R-2

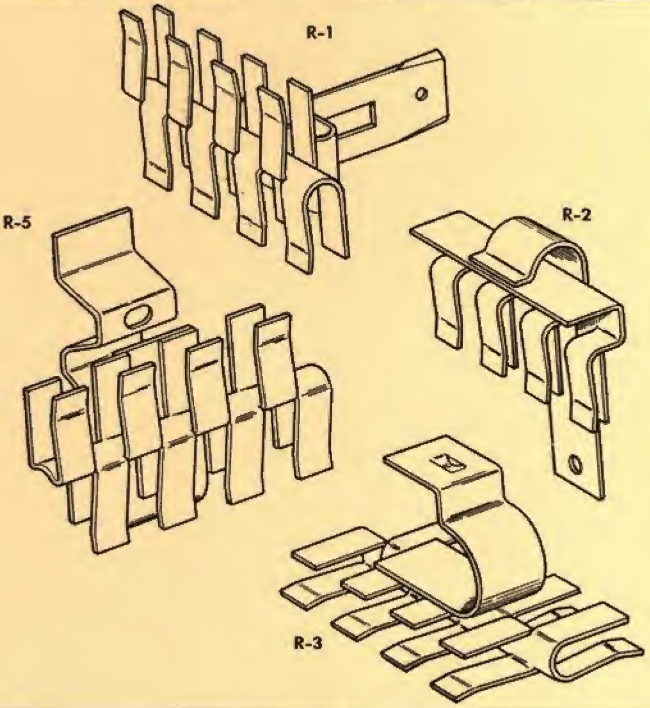
For corners and angles of wood frame construction. Used in conjunction with the R-1 Clips.

Resilient Clip R-3

For suspended ceilings, resilient attachment of ⅜" ROCKLATH to ¾" cold rolled furring channels. ROCKLATH is held ½" away from direct contact with the channel.

Resilient Clip R-5

For masonry walls. Nailed in place over PYROBAR*, lightweight concrete units or clay tile, using 2" staple or 10d cut nails driven into the solid sections of the units or by using toggle bolts in hollow sections of the unit. Spaced 16" o.c. vertically and horizontally. ROCKLATH is resiliently furred out ⅞" from the face of the masonry.

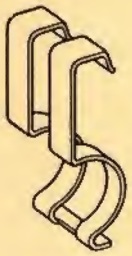


FOR METAL LATH

Specially formed steel clips to provide a non-rigid, or floating attachment of metal lath or channels to the structural frame; affording:
1. Increased protection against plaster cracking due to structural movement.
2. Increased sound transmission loss. (See Data Table on page 3.)

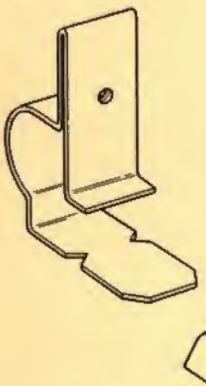
Resilient Clip No. 100

For resiliently attaching ¾" cold rolled furring channels to 1½" cold rolled runner channels in suspended ceiling construction.



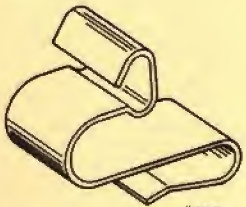
Resilient Clip No. 200

For wood studs or joists. Clips spaced not over 12" o.c. for ceiling construction or 16" o.c. for sidewalls.
Attached by nailing with 13-gauge, 1⅛" lathing nails. Metal lath is floated ½ in. free of the framing members by wire tying to a ¼" pencil rod, nested and tied to the inside of the tongue of the resilient clip.



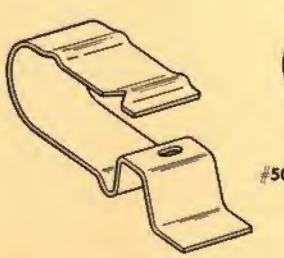
Resilient Clip No. 400

For TRUSSTEEL Studs. Snapped in place, 16" o.c., over the outer flanges of the TRUSSTEEL studs.
Metal lath is floated free of the steel studs by snapping pencil rod into the protruding tongue of the resilient clip.



Resilient Clip No. 500

For masonry walls. Nailed in place over PYROBAR, or light weight concrete units, using 2" staples or 10d cut nails driven into the mortar joints or solid sections of the units. Attached similarly to clay tile or brick by driving 10d cut nail into the mortar joint. Metal lath is resiliently furred out ⅞" from the face of masonry by wire tying to ¾" cold rolled channels wire tied inside the protruding tongue of the resilient clip.



Spacing of Furring Channels—	12"	16"	19"	24"
Spacing of No. 500 Clips—	24"	18"	15"	12"

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*T.M. Reg. U.S. Pat. Off.

TRUSSTEEL* STUD SYSTEMS

DESCRIPTION

The TRUSSTEEL Stud is the original open truss design stud for the erection of hollow, non-load bearing, fire-resistant partitions. The stud is formed of number 7 gauge steel wire rods, with a continuous diagonal wire web welded to double wire flanges. Fabricated in five stud widths; 1⅞", 2½", 3¼", 4" and 6"; and mill cut to job lengths. This engineered stud, together with its accessories, provides a frame work for easy direct or resilient attachment of metal lath or ROCKLATH plaster bases.

FUNCTION AND UTILITY

The TRUSSTEEL Stud open web wire design provides maximum free space for encasement of pipes, conduits or ducts, horizontally, vertically or diagonally, without impairing the partition construction or strength. Web members may be cut easily to accommodate larger ducts or pipes.

Sound Insulation

TRUSSTEEL Stud Partition systems provide an economical and practical solution to sound transmission problems. The following ratings are based on recognized laboratory tests:

(a) Metal Lath and Plaster, from 40db to 46db
(b) ROCKLATH and Plaster, 44db to 48db.
(c) Staggered Steel Studs—Lath and Plaster, 52db.
(d) Resiliently attached Metal Lath, 55db.
(e) Resiliently attached ROCKLATH, 51db.

Note: Above Sound Transmission Loss ratings will vary depending on stud spacing, type of plaster aggregate and the proportioning of aggregate to plaster. Generally, sand aggregate provides greater sound insulation than lightweight aggregates. (See Technical Data—Page 3).

Fire-Protection

Incombustible components, with fire ratings of 1 and 2 hours depending on stud spacing, plaster base and plaster aggregate combinations. (See Technical Data—Page 3).

Economical

Comparable to conventional wood frame, lath and plaster construction in assembly and unit costs.

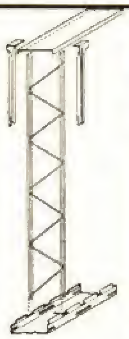
Savings are possible in structural framing due to reduced dead loads over solid partitions of comparable width.

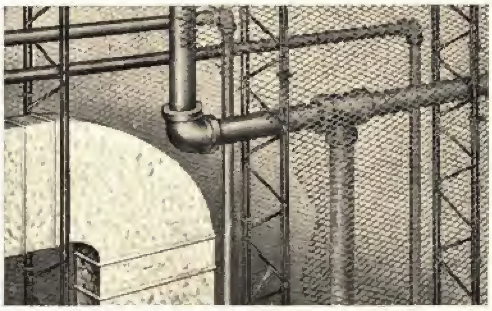
Mechanical trades reduce labor costs through ease of installation.

Strength

The TRUSSTEEL Studs, tested in accordance with Corps of Engineers Specification CE-240 (INT) for flexure under beam loading, complies with the established requirements for deflection.

The TRUSSTEEL Stud ROCKLATH partition tested for approval by the Board of Standards and Appeals, New York City, successfully resisted impact loads. In this test a 360 ft. lb. load was applied at the center of a partition 12'-0" high x 28'-8" long constructed of 2½" Trussteel Studs, ⅜" Rocklath and ½" plaster each side.





Performance

Nationally accepted and used in schools, hospitals, shopping centers, office buildings, apartments, dormitories and hotels as a functional, economical and practical partition. The TRUSSTEEL Stud was engineered, designed and placed in production as a construction material by U.S.G. in 1933. Attachment systems for ROCKLATH, developed to provide further economy, have been nationally accepted, specified and used on thousands of commercial structures.

LIMITATIONS

1. A non-load bearing partition construction.
2. Stud spacing limited to 16 inch maximum for ⅜" ROCKLATH and up to 24 inch maximum for metal lath depending on type of lath selected.
3. Steel Door Frames.
   (1) Frame anchorage to the floor shall be by two power driven attachments, or equal, for each jamb. The floor anchors shall be welded to the frame in a manner that provides rigidity to the frame at the floor line. (One suggested method is shown and detailed—see Page 14.)
   (2) Flange returns must be rigid to control chip cracking due to vibration. Flange returns welded to a minimum of four jamb anchors and grouting the frame with gypsum mortar will minimize vibration.
   (3) Frame should be fabricated of not less than 16 gauge metal.
   (4) Lath and plaster should key into the frame and not terminate against the metal return.
   (5) Diagonal reinforcement, 12" x 18" 2.5 lb. self-furring diamond mesh metal lath, should be applied at door frame corners.
   (6) Long length (16" x 96") ROCKLATH plaster base is recommended over door frames to eliminate butt joints.
   (7) Adequate anchorage of the TRUSSTEEL Studs over the door head is necessary. Use of ¾" channel bracing installed horizontally over the door and tied to all studs within 24" each side of the frame is recommended.
   (8) For maximum sound isolation, partitions should extend from the floor to the structural slab above, otherwise sound will be transmitted through the plenum space, particularly where the ceiling consists of mechanically suspended acoustical systems.

PARTITION THICKNESS (NORMAL PLASTER GROUNDS)

Stud Width 1 5/8"	ROCKLATH and Plaster or ⅜" Riblath and Plaster	Diamond Mesh or ⅛" Riblath and Plaster	Resilient ROCKLATH & Plaster	Resilient Metal Lath & Plaster	Staggered Studs ROCKLATH & Plaster (Min.)	Staggered Studs Metal Lath & Plaster (Min.)	Maximum Partition Height Studs 24"	19"	16"
1⅞ in.	3⅝ in.	3⅜ in.	4⅝ in.				—	—	9'
2½ in.	4½ in.	4 in.	5¼ in.	5 in.	5¼ in.	4¾ in.	9'	14'	15'
3¼ in.	5¼ in.	4¾ in.	6 in.	5¾ in.	6 in.	5½ in.	13'	18'	21'
4 in.	6 in.	5½ in.	6¾ in.	6½ in.	6¾ in.	6¼ in.	16'	20'	22'
6 in.	8 in.	7½ in.	8¾ in.	8½ in.	8¾ in.	8¼ in.	20'	24'	26'

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*T. M. Reg. U.S. Pat. Off.

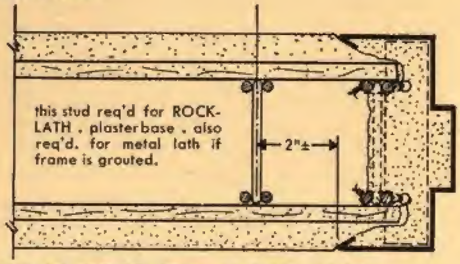
DETAILS Scale / as noted

METAL DOOR FRAMES

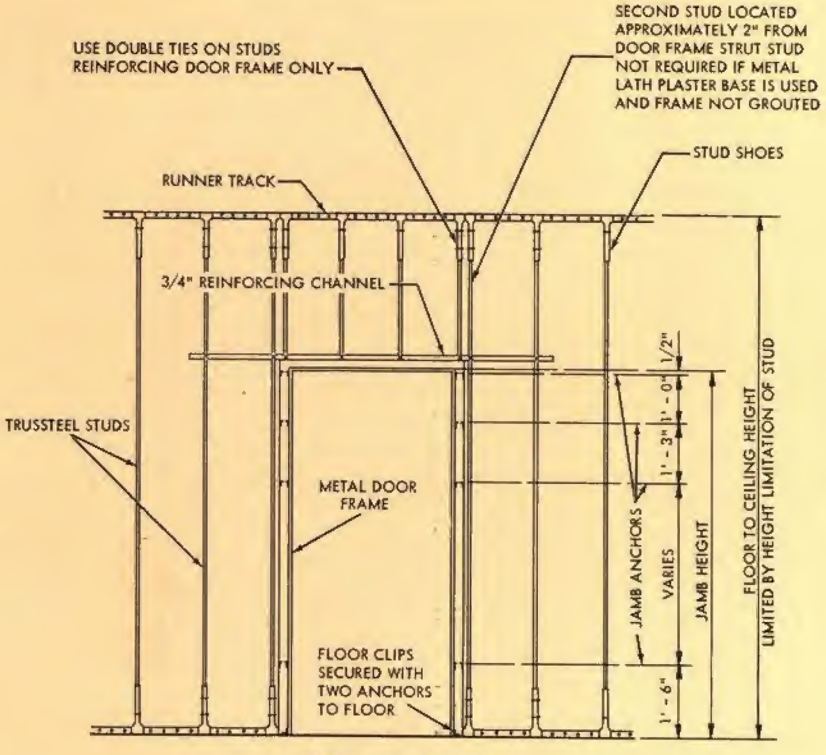
Jamb Anchor inserts should be notched according to size of stud and welded in the frame as shown in the detail.

Grouting of the frame, after installation of the jamb stud, is recommended. If grouting is not specified it is important that jamb anchor inserts be welded to the jamb face and flange returns, in the case of reveal type frames; or to the flanges, in the case of flush type frames, to avoid movement of the frame.

To prevent frame rotation, it is recommended that the floor clips be welded to the back of jamb face and to the flange returns, or that they be welded between the flanges, and then secured to the floor with two spaced anchors. Anchor insert clips if inverted will serve as floor clips.

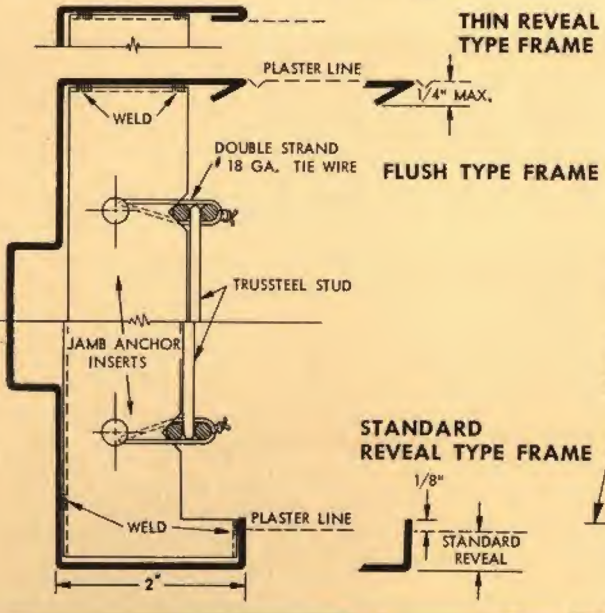

this stud req'd for ROCK-LATH . plasterbase . also req'd. for metal lath if frame is grouted.
2"±

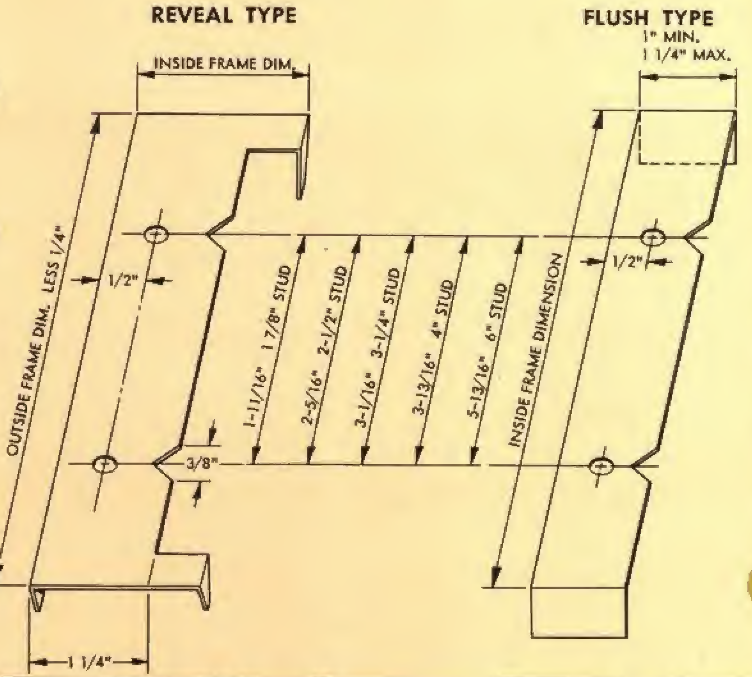
METAL DOOR FRAME / 3" = 1'-0"
showing line of recommended grouting raked out along side of jamb anchor stud to permit lath & plaster to enter frame if grouting is not specified, lath should carry well into frame and plaster forced beyond flange return.


USE DOUBLE TIES ON STUDS REINFORCING DOOR FRAME ONLY
SECOND STUD LOCATED APPROXIMATELY 2" FROM DOOR FRAME STRUT STUD NOT REQUIRED IF METAL LATH PLASTER BASE IS USED AND FRAME NOT GROUTED
STUD SHOES
RUNNER TRACK
3/4" REINFORCING CHANNEL
TRUSSTEEL STUDS
METAL DOOR FRAME
FLOOR CLIPS SECURED WITH TWO ANCHORS TO FLOOR
1/2"
1'-0"
1'-3"
JAMB ANCHORS
VARIES
1'-6"
JAMB HEIGHT
FLOOR TO CEILING HEIGHT
LIMITED BY HEIGHT LIMITATION OF STUD

WALL ELEVATION

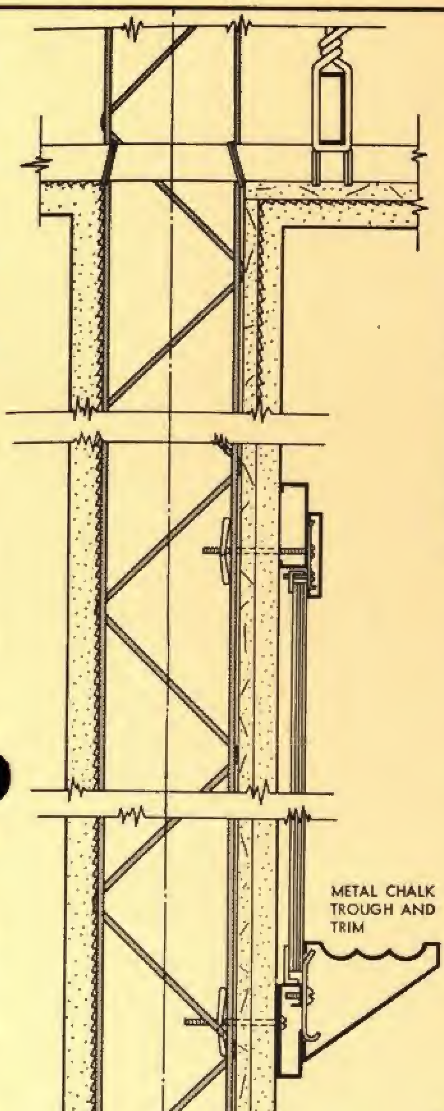
JAMB ANCHOR INSERTS / half size



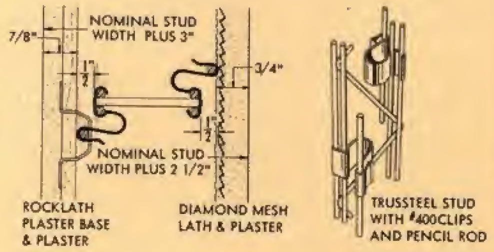


*T.M. Reg. U.S. Pat. Off.

DETAILS / No Scale



RESILIENT ATTACHMENT OF ROCKLATH AND METAL LATH


NOMINAL STUD WIDTH PLUS 3"
7/8"
1/2"
3/4"
1/2"
NOMINAL STUD WIDTH PLUS 2 1/2"
ROCKLATH PLASTER BASE & PLASTER
DIAMOND MESH LATH & PLASTER
TRUSSTEEL STUD WITH #400CLIPS AND PENCIL ROD

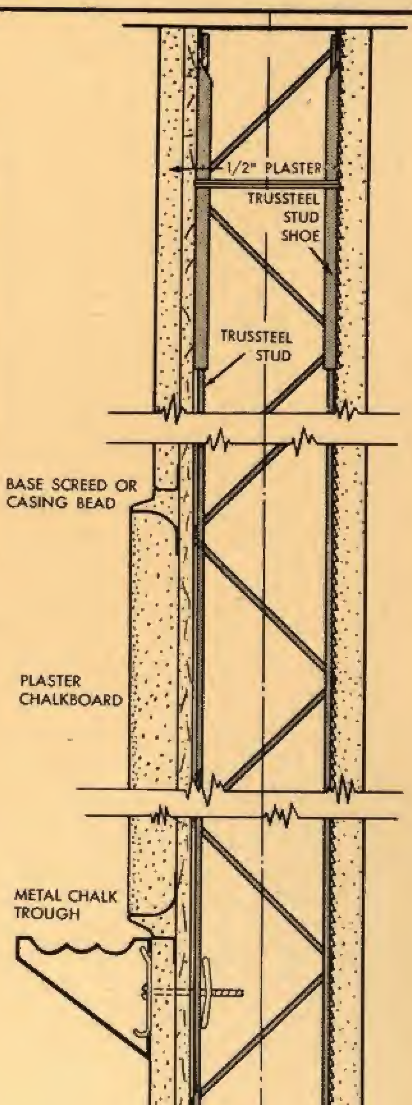
NOTES

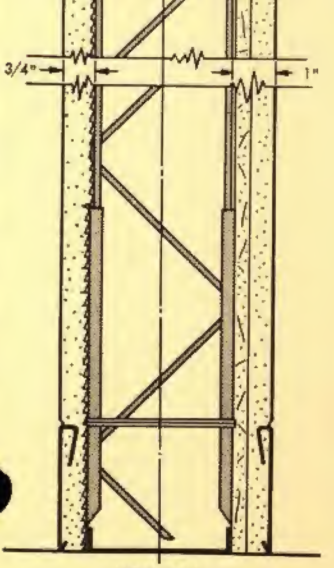
Runner track at ceiling to be securely attached to concrete with stub nails, drives or wire tied to lath or grillage, or track may be omitted and studs fastened to channels.
See page 13 for table of partition data.

CHALKBOARD

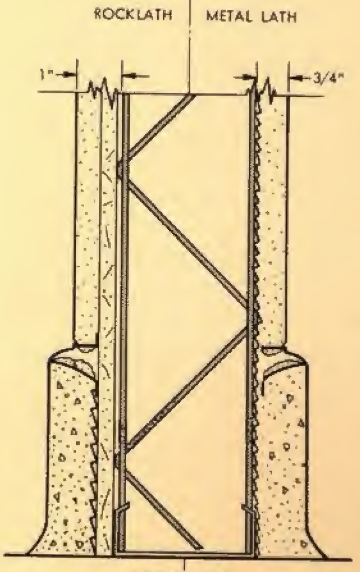
The chalkboard details shown here are typical. Consult the chalkboard manufacturer's printed directions for specific installation directions.

Plaster Chalkboard (detailed at right) offers opportunity for unusual application. Entire walls can be chalkboard since there is no limiting sheet size. Maintenance is comparable to conventional fabricated boards. (See specifications pages 28 and 29).

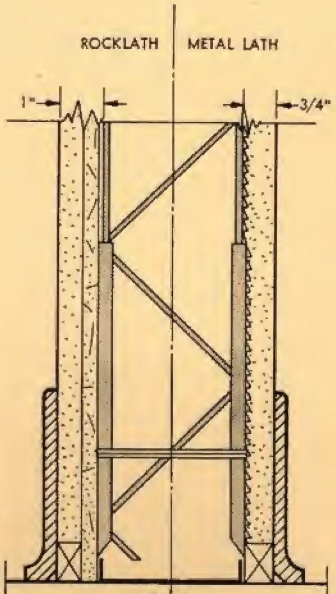




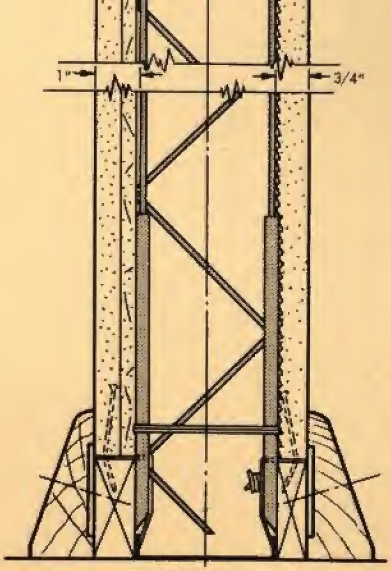
METAL BASE



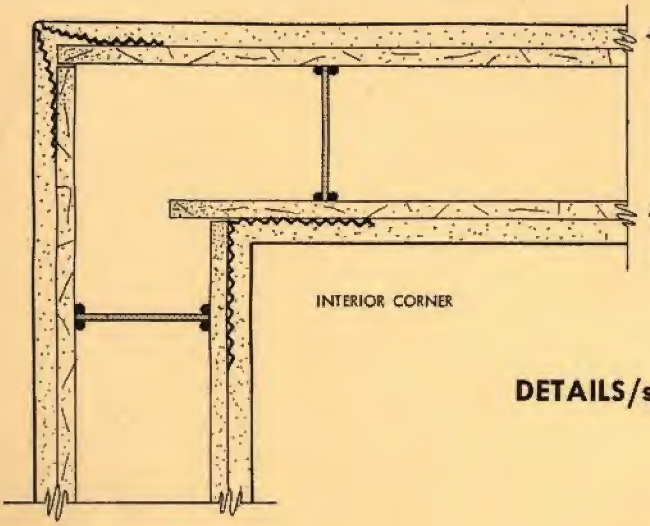
CEMENT BASE



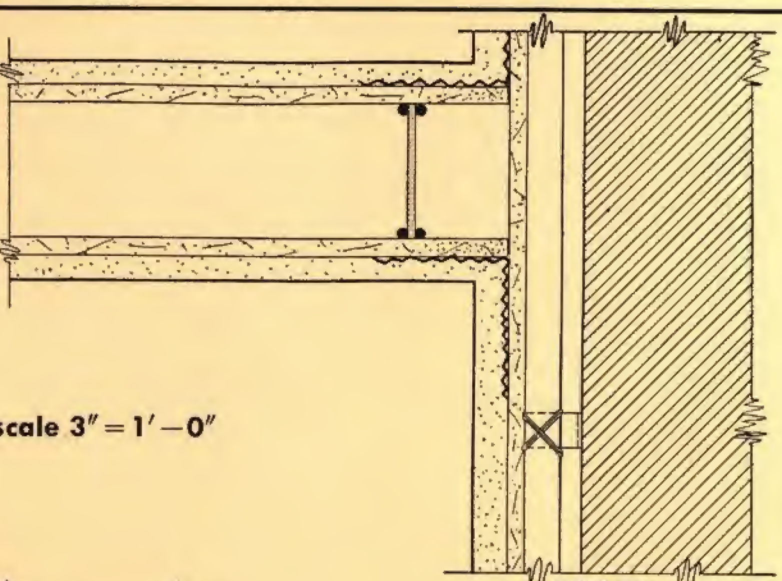
RUBBER BASE



WOOD BASE

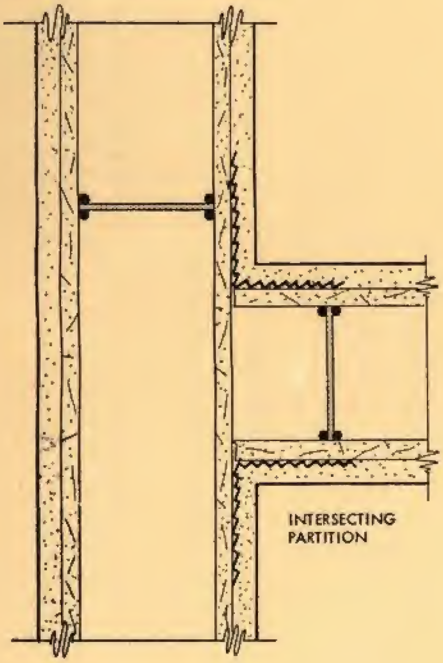


INTERIOR CORNER

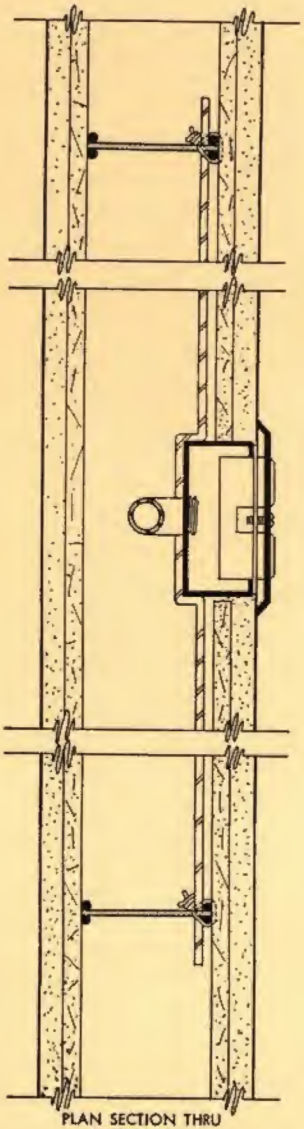


FURRED WALL

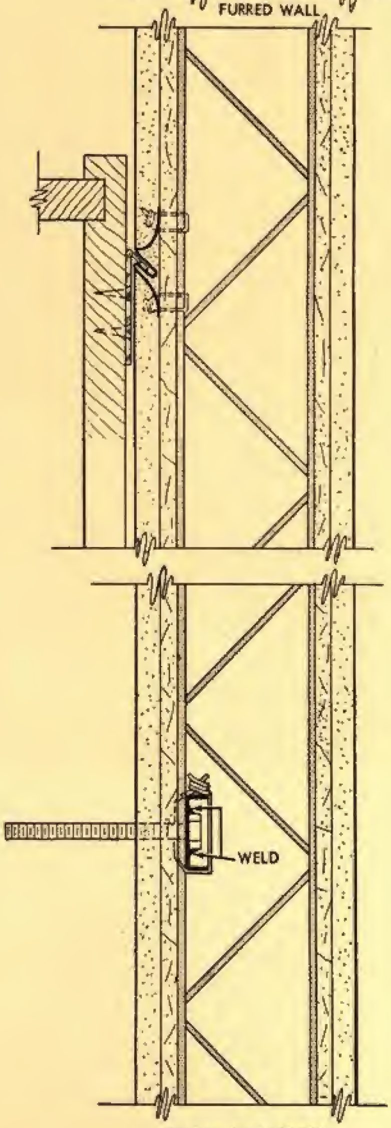
DETAILS/scale 3″ = 1′ – 0″



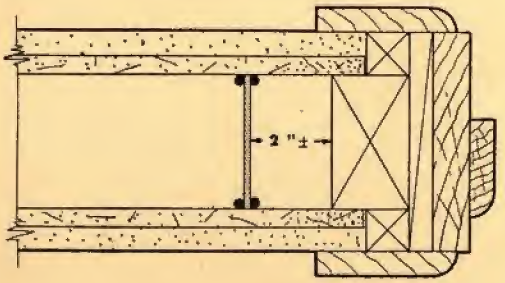
INTERSECTING PARTITION



PLAN SECTION THRU OUTLET BOX



FIXTURE ATTACHMENT



WOOD DOOR BUCK

SOLID PLASTER PARTITIONS

DESCRIPTION

The solid partition is a monolithic plaster construction adaptable to non-load bearing requirements with a minimum thickness of 1½ inches for metal lath and 2 inches for ROCKLATH. It is flexible in that additional strength, rigidity, and greater fire protection can be gained by increasing the plaster thickness.

Solid plaster partitions consist primarily of a metal lath or ROCKLATH curtain to which gypsum basecoats and finish plasters are applied to established grounds. Solid partitions with metal lath or ROCKLATH plaster bases are anchored at floor and ceiling and are temporarily braced during the plastering operation. Solid partitions with metal lath plaster base may be studless or have ¾″ channel studs.

FUNCTION AND UTILITY

Economical:

1. The solid plaster partition saves space and costly floor area.
2. The solid plaster partitions are accepted as the most economical fire resistant plaster partition assemblies.
3. In structural design the dead load for 2 inch partitions will vary from 9 lbs. to 18 lbs. per sq. ft. depending on the type of plaster and aggregate used. Dead loads can be estimated at 18 lbs. per sq. ft. of partition with sanded gypsum plaster over metal lath, 9 lbs. with gypsum perlite over ROCKLATH.

Fire-Protection—Constructed of incombustible components, solid plaster partitions constructed as specified have established fire ratings of one hour for two inch and two hours for 2½ inch thickness. (See Technical Data—Page 3.)

Strength—Impact tests with a 240 ft. load concentrated at the center of a 2″ x 8′–0″ x 16′–0″ panel failed to produce discernable cracking. Additional strength and rigidity are gained by increasing the partition thickness.

Sound Insulation—Sound Transmission Losses of 36 to 39 decibels for the 2 inch partition are usually considered adequate for dividing spaces. Increased sound transmission loss is obtained by increasing the partition thickness. (See Technical Data—Page 3.)

Performance—Nationally accepted and used in schools, apartments and hotels as a functional and economical partition construction. Most major apartment house projects have used these assemblies with low maintenance costs and excellent performance.

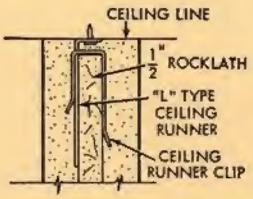
LIMITATIONS

1. Non-load bearing partitions only.
2. Limiting heighth is 10′–0″.
3. Steel door frames and metal bases must be grouped with gypsum mortar.
4. Two inch partitions like all other partition constructions should be isolated from reinforced concrete framing columns and beams. The partition will not resist stresses transmitted to it by movement or deflection of the structural components of the building.

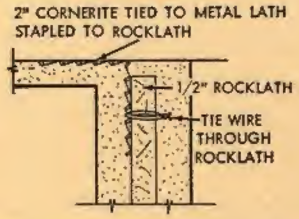
- please turn page for additional details

SOLID ROCKLATH & PLASTER PARTITIONS DETAILS / 3″=1′–0″

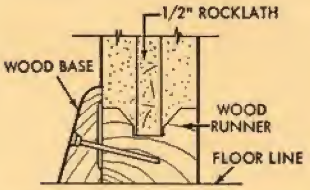
ROCKLATH plaster partition ceiling detail



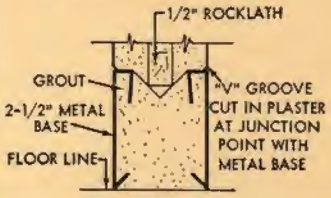
ROCKLATH plaster partition ceiling detail


2" CORNERITE TIED TO METAL LATH STAPLED TO ROCKLATH
1/2" ROCKLATH
TIE WIRE THROUGH ROCKLATH

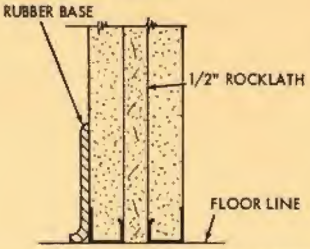
ROCKLATH plaster partition wood floor runner detail



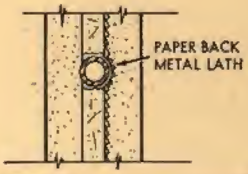
ROCKLATH plaster partition 2½″ metal base detail



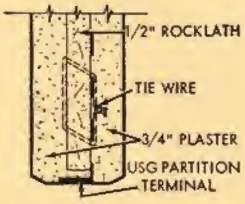
USG floor runner



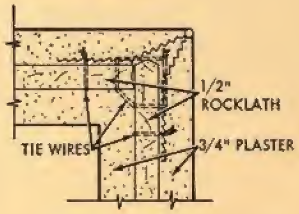
rigid conduit



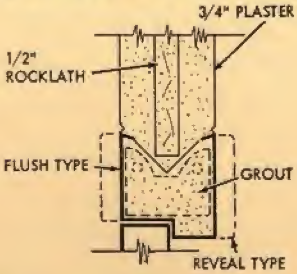
metal partition end



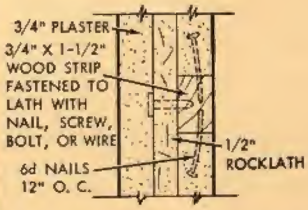
partition corner



metal door frame



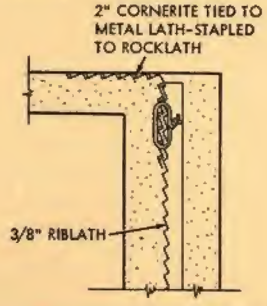
cabinet and shielding attachment


3/4" PLASTER
3/4" X 1-1/2" WOOD STRIP FASTENED TO LATH WITH NAIL, SCREW, BOLT, OR WIRE
6d NAILS 12" O. C.
1/2" ROCKLATH

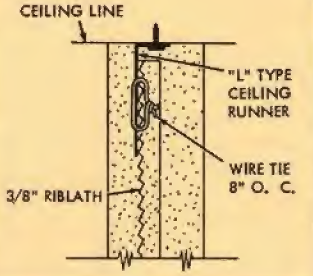
DETAILS/scale 3″=1′–0″

⅜″ riblath-plaster solid partition

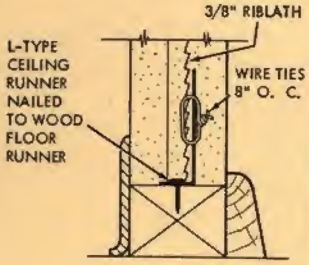
ceiling



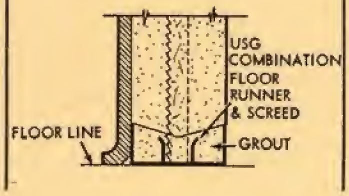
ceiling



wood base runner

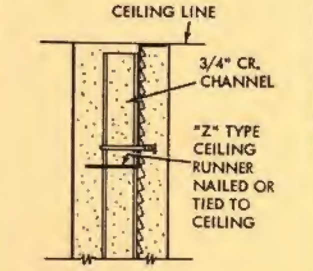


⅜″ riblath plaster partition with combination floor runner & screed

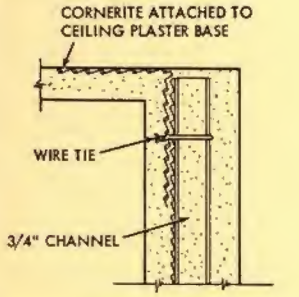


metal lath channel stud solid partition

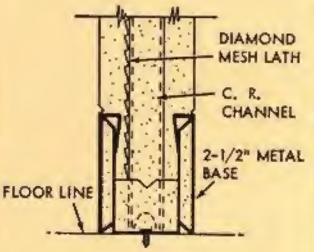
ceiling
diamond mesh lath



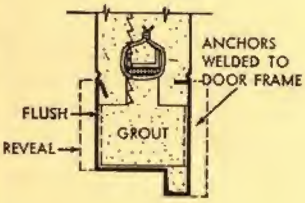
ceiling



double base clip



channel stud



CORE WALLS

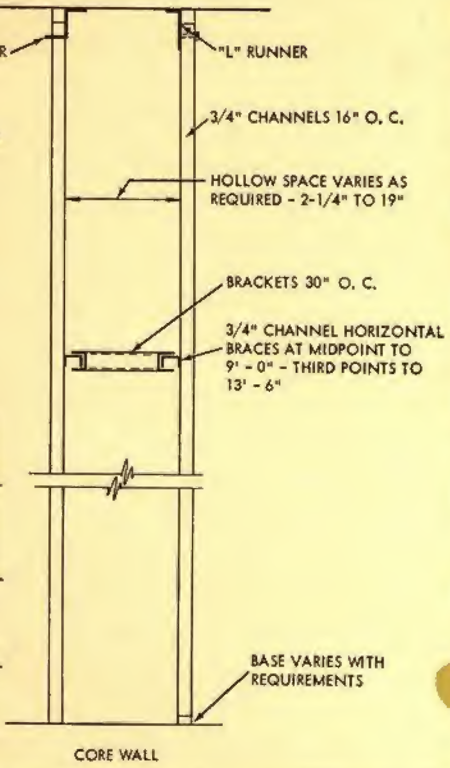
DETAILS/scale as noted

The core wall is a versatile partition construction used in conjunction with solid partition systems to provide a pipe space for mechanical installations. Core walls, consisting of channel studs and either ROCKLATH ⅜″ x 16″ x 48″ or metal lath plaster bases may be designed to provide variable core widths.

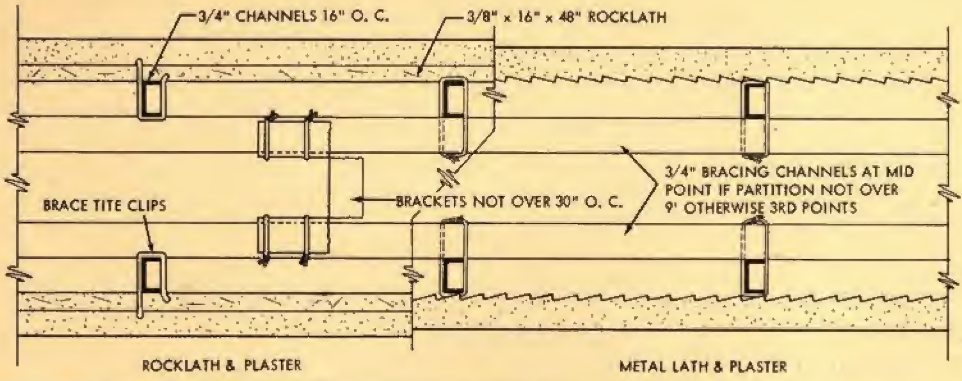
Sound insulation tests on core wall constructions with studs resting on concrete and without cross bracing are recognized and accepted as approximately 48 decibels. Cross ties, as recommended for good practice and structural rigidity, will reduce this 48 decibel transmission loss.

Limiting heights and grouting of metal bases follow closely the recommendations outlined for solid plaster partitions.

vertical section 1½″=1′—0″


"Z" RUNNER
"L" RUNNER
3/4" CHANNELS 16" O. C.
HOLLOW SPACE VARIES AS REQUIRED - 2-1/4" TO 19"
BRACKETS 30" O. C.
3/4" CHANNEL HORIZONTAL BRACES AT MIDPOINT TO 9' - 0" - THIRD POINTS TO 13' - 6"
BASE VARIES WITH REQUIREMENTS
CORE WALL

horizontal section 3″=1′–0″.


3/4" CHANNELS 16" O. C.
3/8" x 16" x 48" ROCKLATH
BRACE TITE CLIPS
BRACKETS NOT OVER 30" O. C.
3/4" BRACING CHANNELS AT MID POINT IF PARTITION NOT OVER 9' OTHERWISE 3RD POINTS
ROCKLATH & PLASTER
METAL LATH & PLASTER

EXTERIOR WALL FURRING SYSTEM

DESCRIPTION

The Exterior Wall Furring System is a method of attaching ¾" channels and long length Insulating ROCKLATH plaster base to exterior walls using USG Adjustable Wall Furring Brackets.

FUNCTION AND UTILITY

Furrs and Aligns Exterior Wall—Attachment of ¾" channels and Long Length Insulating ROCKLATH to exterior masonry walls using USG Adjustable Wall Furring Brackets furrs and aligns wall, providing proper air space and a uniformly even plaster base.

Sturdy—Rust Resistant—Easily Attached—USG Adjustable Wall Furring Brackets are made from 20 gauge tight coat galvanized steel. Easily attached to masonry walls using ⅝" stub nails for concrete and 2" cut nails for masonry, or can be laid in mortar joints.

Insulation—The use of long length Insulating ROCKLATH provides insulation equivalent to ½" fiber insulating board. (See Insulating ROCKLATH plaster base, pages 4 and 5.)

Vapor Barrier—Insulating ROCKLATH plaster base is an effective safeguard against harmful condensation.

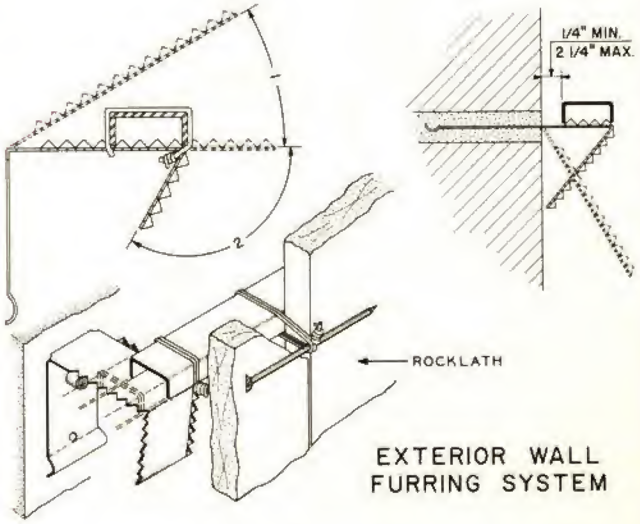
LIMITATIONS

1. Limiting height is 12'-0" unless special details are incorporated.

2. Minimum air space of 1" required. Space between back of lath and the wall shall not be filled with wool or other materials.

ADJUSTABLE WALL FURRING BRACKETS

1. After attachment, bend bracket to horizontal position.
2. Wire tie plumbed channel to bracket ¼" min. from wall.
3. Bend excess down.



EXTERIOR WALL FURRING SYSTEM

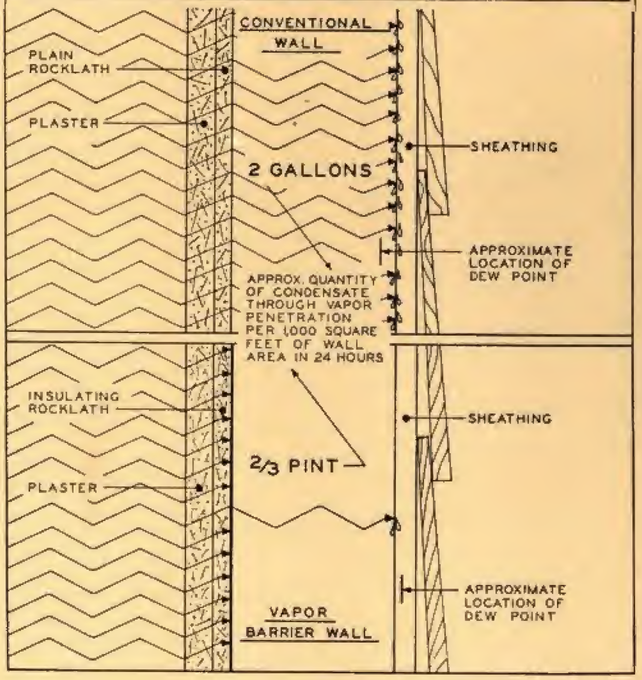
VAPOR BARRIERS

Vapor Barrier—The insulating ROCKLATH applied to the inside face of all exterior walls and top floor ceilings provides an effective vapor barrier to help safeguard against harmful condensation within such spaces.

When the atmospheric conditions indicated in the accompanying chart are of considerable duration, the amount of condensation in the "Conventional Wall" is sufficient to damage the interior decoration, exterior paint, or any of the other wall components. In the "Vapor Barrier Wall," however, the quantity of condensate is so minor as to be readily dissipated.

ILLUSTRATION OF IMPORTANCE OF VAPOR BARRIER

INSIDE ATMOSPHERE		OUTSIDE ATMOSPHERE
70°F	TEMPERATURE	10°F
45%	RELATIVE HUMIDITY	90%
3.63	GRAINS MOISTURE PER CU. FT.	0.69
0.332 IN. HG.	RESULTANT VAPOR PRESSURE	0.067 IN. HG.


CONVENTIONAL WALL
PLAIN ROCKLATH
PLASTER
2 GALLONS
SHEATHING
APPROXIMATE LOCATION OF DEW POINT
APPROX. QUANTITY OF CONDENSATE THROUGH VAPOR PENETRATION PER 1,000 SQUARE FEET OF WALL AREA IN 24 HOURS
INSULATING ROCKLATH
2/3 PINT
SHEATHING
PLASTER
APPROXIMATE LOCATION OF DEW POINT
VAPOR BARRIER WALL

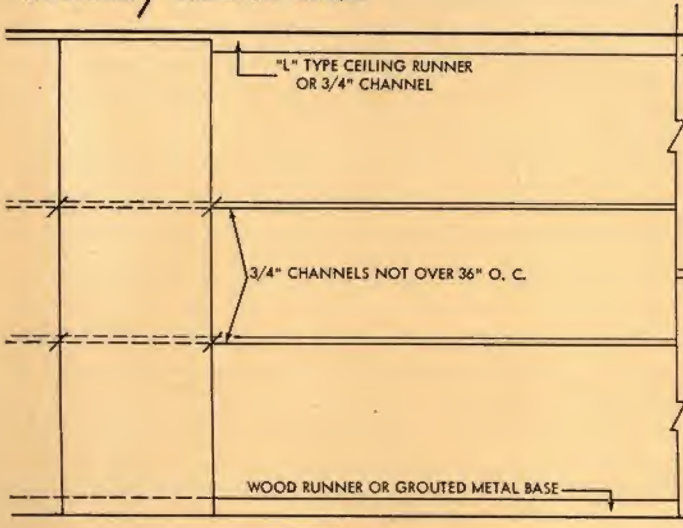
RECOMMENDATIONS

1. An efficient vapor barrier should be installed in all exterior walls and ceilings in locations where below freezing weather occurs for extended periods of time.

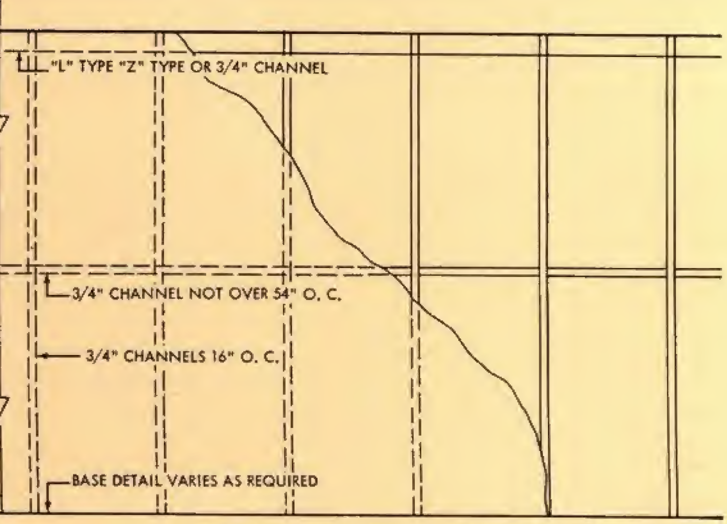
2. Vapor barrier should be located on the warm side of the exterior wall or top floor ceiling.

3. Vapor barrier should have a vapor permeability of not more than 1.00 perms. (Grains per square foot per hour per inch of mercury vapor pressure difference.)

DETAILS / scale as noted

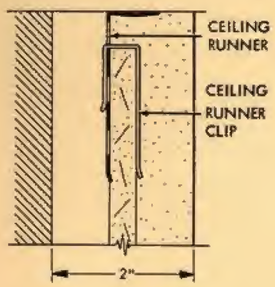

"L" TYPE CEILING RUNNER OR 3/4" CHANNEL
3/4" CHANNELS NOT OVER 36" O. C.
WOOD RUNNER OR GROUTED METAL BASE

long length insulating ROCKLATH and plaster elevation

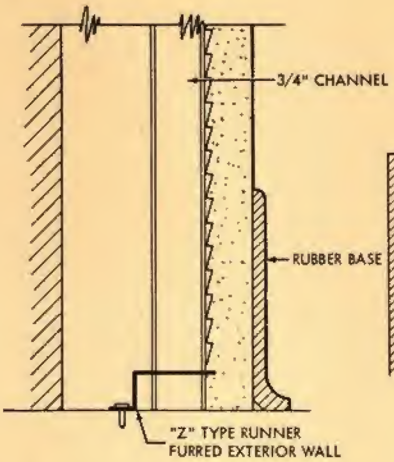

"L" TYPE "Z" TYPE OR 3/4" CHANNEL
3/4" CHANNEL NOT OVER 54" O. C.
3/4" CHANNELS 16" O. C.
BASE DETAIL VARIES AS REQUIRED

¾" channel furring, metal lath or insulating ROCKLATH and plaster

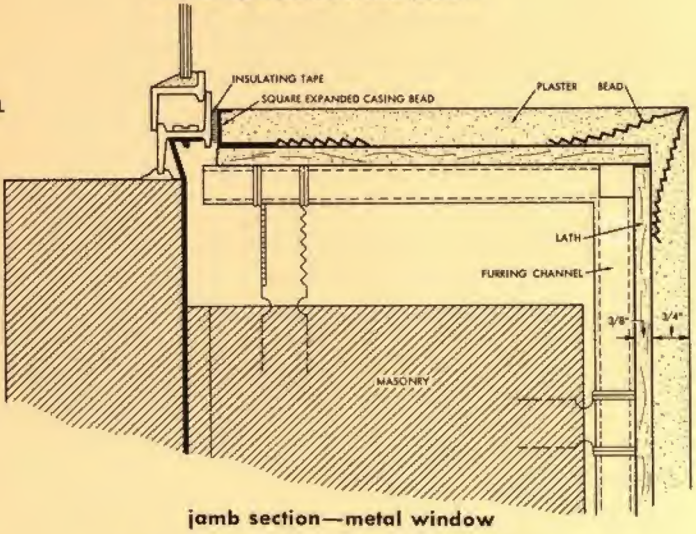
ELEVATION / ½" = 1'-0"



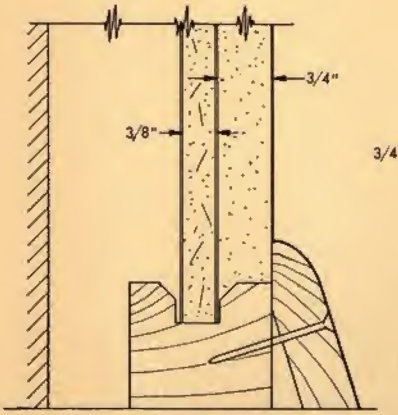
ceiling



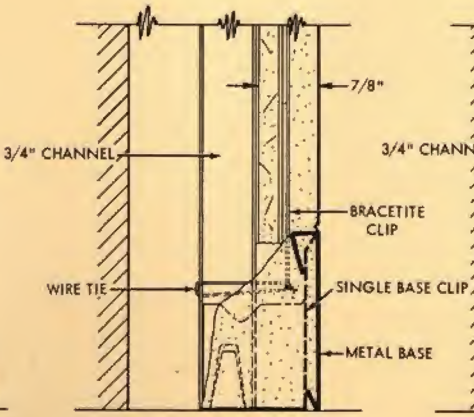
rubber base



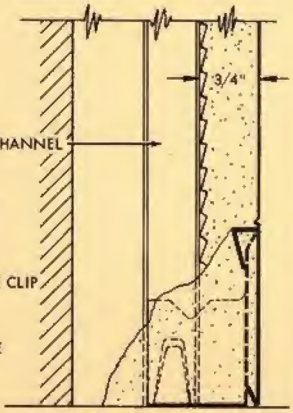
jamb section—metal window



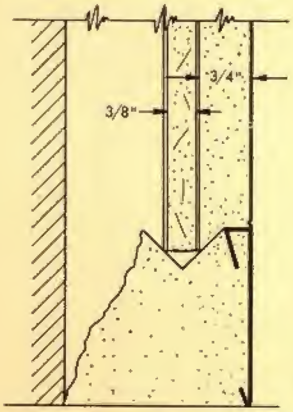
wood runner & wood base long length ROCKLATH & plaster



ROCKLATH & plaster



metal lath & plaster



metal base—long length ROCKLATH & plaster

BEAM and COLUMN FIREPROOFING

DESCRIPTION

Membrane fireproofing of lath and gypsum plasters provides lightweight, thin, compact fire-protection and finished surfaces for structural framing members. The protection afforded in hours of fire resistance depends on the type of lath base, its method of attachment and spacing, proportioning of aggregate to gypsum plaster and plaster thickness.

FUNCTION AND UTILITY

Fire-Protection—The component parts are incombustible. The gypsum, in addition, calcines slowly, retarding flame and resisting heat transfer by giving up its chemically combined water of crystallization. The aggregate acts only as a bulking agent for the plaster and some types, as an insulating material against heat transfer. For example, lightweight aggregates provide more fire resistance than sand.

Economy—The thin lightweight lath and plaster assembly reduces the dead load and lost floor area. The plaster surface provides the base for final decoration. Increased fire-protection permits lower insurance premiums.

LIMITATIONS

To resist impact, provide adequate protection at column corners subject to damage from cartage equipment, etc.

FIRE RATINGS

ratings vary with plaster thickness and aggregate ratio

ROCKLATH Plaster Base

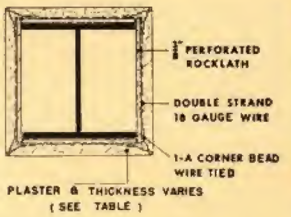
rating	thickness	aggregate	ratio
1 hr.	½″	Sand	1:2½
1½ hr.	⅝″	Sand	1:2½
2 hr.	1″	Perlite	100:2½
3 hr.	1¾″	Perlite	100:2, 100:3
4 hr.	1½″	Perlite	100:2, 100:3

Metal Lath Plaster Base

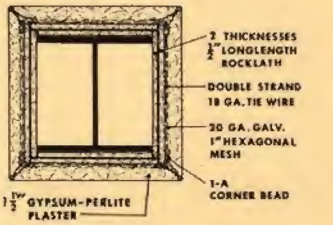
rating	thickness	aggregate	ratio
1 hr.	¾″	Sand	1:2, 1:3
2 hr.	1″	Perlite	100:2, 100:3
3 hr.	1⅜″	Perlite	100:2, 100:3
4 hr.	1¾″	Perlite	100:2, 100:3

DETAILS / no scale

- ROCKLATH column fireproofing

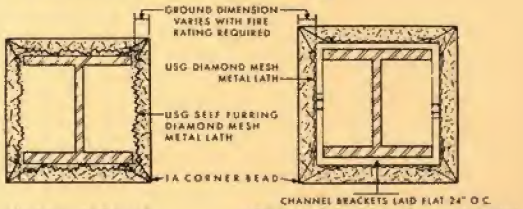

⅜" PERFORATED ROCKLATH
DOUBLE STRAND 18 GAUGE WIRE
1-A CORNER BEAD WIRE TIED
PLASTER & THICKNESS VARIES (SEE TABLE)

1, 1½, 2 & 3 hr.


2 THICKNESSES ½" LONGLENGTH ROCKLATH
DOUBLE STRAND 18 GA. TIE WIRE
20 GA. GALV. 1" HEXAGONAL MESH
1-A CORNER BEAD
1½" GYPSUM-PERLITE PLASTER

4 hr.

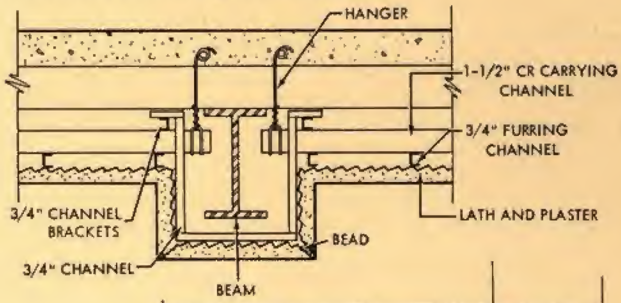
- metal lath column fireproofing

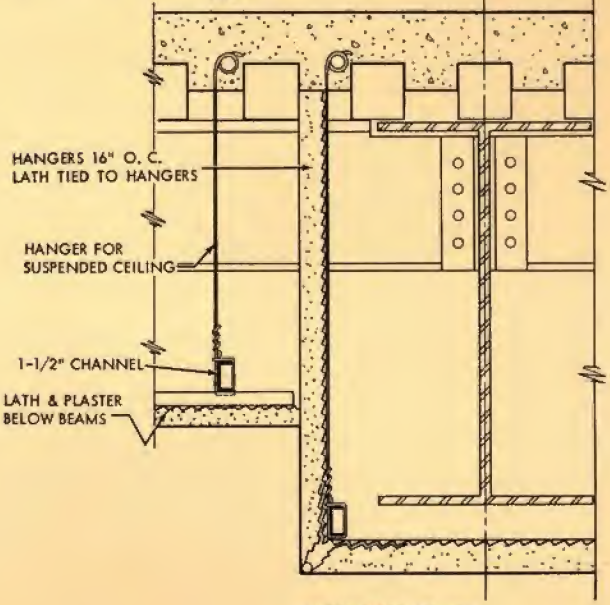

GROUND DIMENSION VARIES WITH FIRE RATING REQUIRED
USG DIAMOND MESH METAL LATH
USG SELF FURRING DIAMOND MESH METAL LATH
1A CORNER BEAD
CHANNEL BRACKETS LAID FLAT 24" O.C.

COLUMN FURRING

ALTERNATE METHOD OF COLUMN FURRING

- metal lath beam & girder fireproofing




HANGERS 16" O. C. LATH TIED TO HANGERS
HANGER FOR SUSPENDED CEILING
1-1/2" CHANNEL
LATH & PLASTER BELOW BEAMS

GIRDER FIREPROOFING

DESCRIPTION

Suspended ceilings consist of three basic elements:

1. Light channel grillage, properly supported, rigid and of sufficient strength to carry to dead load without deflection.
2. A lath plaster base securely attached to the grillage on which the plaster may be applied.
3. The plaster consisting of the basecoat and finish coat.

FUNCTION AND UTILITY

Fire-Protection—Constructed of incombustible component parts, it is possible to design for established fire resistance ratings of one to four hours by varying grillage spacing, type of lath and attachment, type of aggregate and proportioning of gypsum plaster and plaster thickness.

Economy—Lightweight. The established fire ratings can reduce annual insurance premiums.

Utility—The fireproof membrane serves to conceal structural and mechanical elements, and as the decorative base either as a paintable surface or as an acoustical ceiling with acoustical plaster as an integral part of the assembly or as a base for adhesive application of acoustical tile.

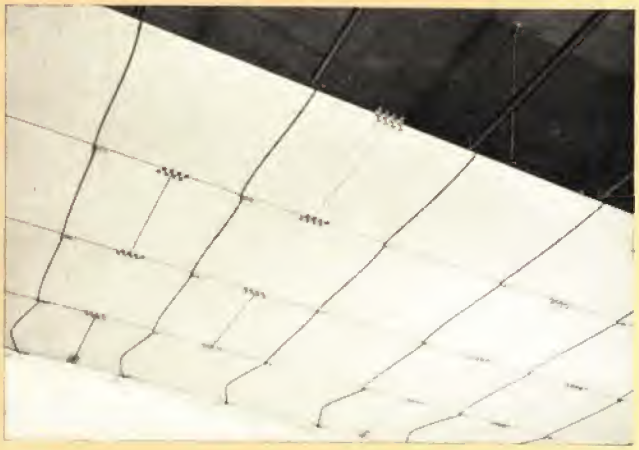
Insulation and Vapor Barrier—Where insulation and vapor barriers are desired, use of insulating (foil back) Rocklath will provide an effective vapor barrier and increase the overall "U" factor of the roof ceiling assembly.

LIMITATIONS

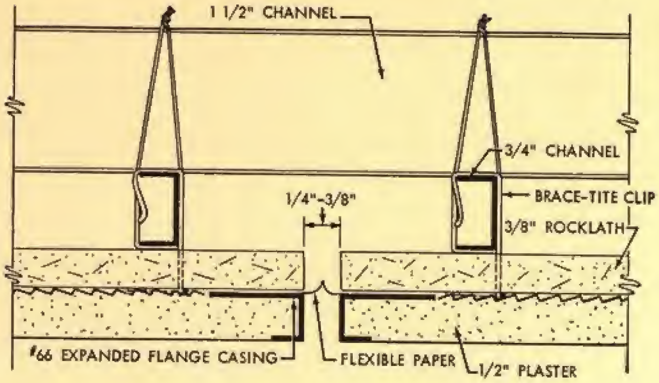
1. Main carrying channels and cross furring members should not be let into masonry walls or partitions, but should be independently supported.
2. All recommended spacings of hanger wires and channels are maximum and should not be exceeded.
3. Brace-Tite Field Clips are designed for use with standard ¾" cold rolled channels having ½" legs (Minimum).
4. On large continuous ceiling expanses the following recommendations will provide better performances:
    - (a) Free the ceiling from columns, walls and partitions.
    - (b) Break the continuity of grillage, lath and plaster where large ceiling expanses occur by control joints or other means.
    - (c) Lightweight aggregates reduce the strength of the basecoat plaster. Where lightweight aggregates are used over grillage and metal lath it is desirable to reduce the span of cross furring members.
    - (d) Where contact furred or suspended ceilings occur under roof construction the plenum should be vented according to recommended engineering practice.
    - (e) The grillage recommendations are for support of the lath and plaster dead loads and are not designed to support concentrated loads of mechanical equipment or workmen, particularly after the plaster has been applied. Independently supported cat walks and equipment platforms should be provided.

DETAILS / half size

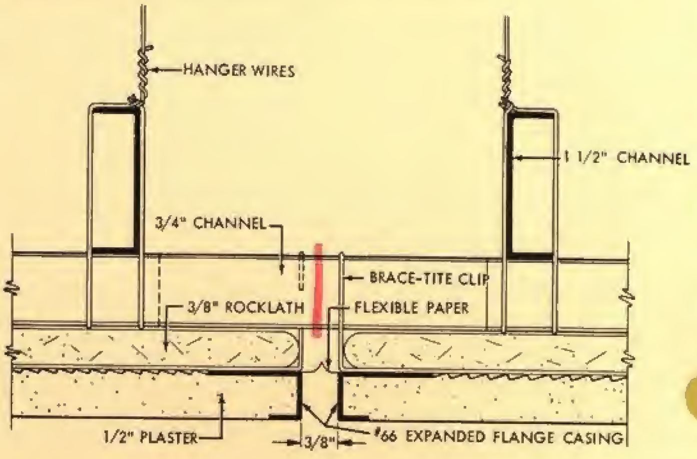
- **Rocklath Plaster Base Brace-Tite System**



expansion joint . . . parallel to ¾" channels

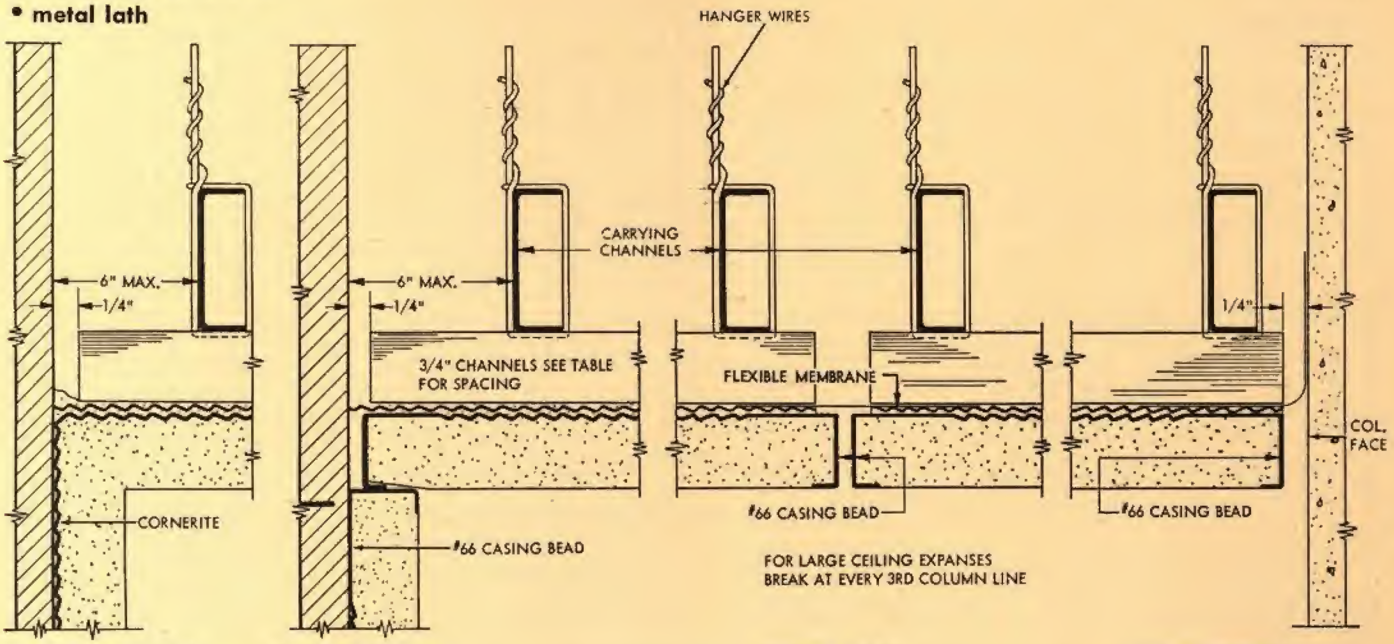


expansion joint perpendicular to ¾" channels



DETAILS / half size

• metal lath



RESTRAINED CEILING — PARTITION ISOLATION — CONTROL JOINT — COLUMN ISOLATION

SIZE AND SPACING OF HANGERS

Size and Type	Maximum Ceiling Area Supported Per Hanger	Maximum Center to Center Spacing of Hangers
No. 9 Gauge Galvanized Wire	12½ sq. ft.	4 ft. x 3 ft.; 3½ ft. x 3½ ft.
No. 8 Gauge Galvanized Wire	16 sq. ft.	4 ft. x 4 ft.; 5 ft. x 3 ft.
3⁄16″ Mild Steel Rod (1) (2)	25 sq. ft.	6 ft. x 4 ft.; 7 ft. x 3½ ft.; 8 ft. x 3 ft.
¼″ Mild Steel Rod (1) (2)		
3⁄16″ x 1″ Mild Steel Flat (1) (2)		

(1) Galvanized Rods and Rust Inhibitive painted or Galvanized Straps recommended where severe moisture conditions may occur
(2) See Note 2 below.

SIZE AND SPACING OF MAIN RUNNERS

Size and Type	Weight per 1000 lineal feet	Maximum Spacing of Hangers along Runners	Center to Center Spacing of Runners
1½″ Cold Rolled Channel	514 lbs.	4 ft.	Up to 4 ft.
1½″ Hot Rolled Channel (2)	1120 lbs.	5 ft.	Up to 4 ft.
2″ Cold Rolled Channel	625 lbs.	5 ft.	Up to 4 ft.
2″ Hot Rolled Channel (2)	1260 lbs.	6 ft.	Up to 4 ft.
2½″ Hot Rolled Channel (2)	1500 lbs.	7 ft.	Up to 3½ ft.
2½″ Hot Rolled Channel (2)	2270 lbs.	8 ft.	Up to 3 ft.

(2) Not manufactured or supplied by United States Gypsum Company.

SIZE AND SPACING OF FURRING MEMBERS

Spacing of Supports	Size	Weight Per 1000 Feet	Maximum Spacing
3′–0″	¾″ Channel	300 lbs.	24″
3′–6″	¾″ Channel	300 lbs.	19″
4′–0″	¾″ Channel	300 lbs.	16″

RESILIENT PLASTERING SYSTEMS

DESCRIPTION

Resilient lathing and plastering systems consist of three elements:

1. Specially formed steel clips to provide a resilient attachment of conventional lathing materials to the structural framing.
2. Metal lath or Rocklath plaster base.
3. Basecoat and finish coat plasters.

FUNCTION AND UTILITY

Sound Insulation—By resiliently attaching the lath and plaster diaphragms to the framing, the transfer of air-borne sound is materially reduced. For example:

	db Sound Transmission Loss
Wood Stud Partitions	
Nail-on Rocklath	41.1
Resilient Clips & Rocklath	52.2
Trussteel Studs & Metal Lath	
Tied-on Metal Lath	40.5
Resilient Clips & Metal Lath	54.7
Pyrobar Partitions	
Plaster Direct	39
Resilient Clips—metal lath and plaster one side	50

Crack Resistance—The resilient attachment of the lath and plaster reduces transmission of stresses due to structural movement.

Economy—It is generally accepted that added resistance to sound transfer can best be obtained through increased mass or through isolation of the partition faces. The first is costly in materials and labor and increases the dead-load carried by the structural frame.

Isolating the surface by resilient clips adds only the nominal cost of a few clips per sq. yd. of partition to the cost of conventional construction materials and assemblies.

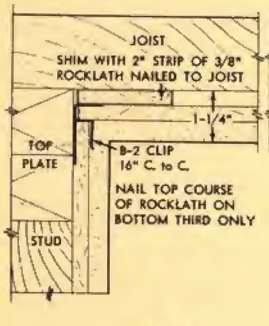
Reduction of future maintenance and decoration is a long range economy.

LIMITATIONS

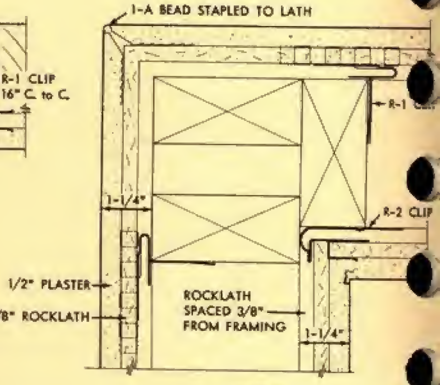
1. See limitations on Rocklath plaster base and Metal Lath, Pages 4 & 6.
2. Perforated Rocklath should not be used on ceilings with the resilient clips directly supporting the lath. Use plain or insulating Rocklath and *Three* coat plaster; the full scratch coat cross-raked and allowed to set, followed by a brown coat applied to a total uniform thickness of not less than 7/16 inch.

RESILIENT ROCKLATH

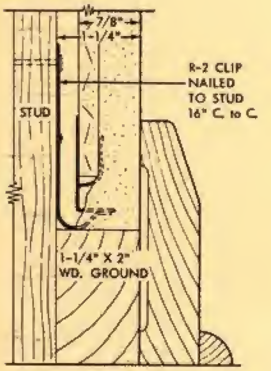
No Scale


JOIST
SHIM WITH 2" STRIP OF 3/8" ROCKLATH NAILED TO JOIST
R-1 CLIP 16" C. to C.
1-1/4"
TOP PLATE
B-2 CLIP 16" C. to C.
NAIL TOP COURSE OF ROCKLATH ON BOTTOM THIRD ONLY
STUD

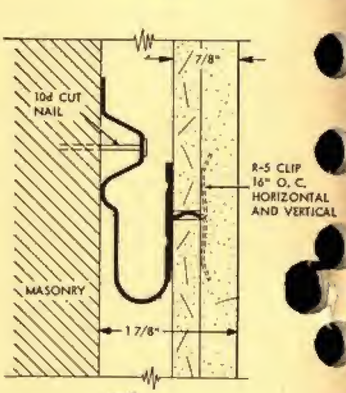
ceiling



corner



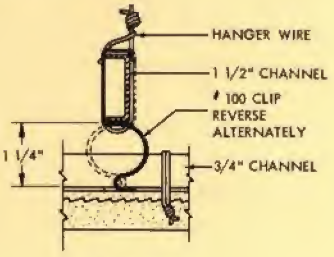
base



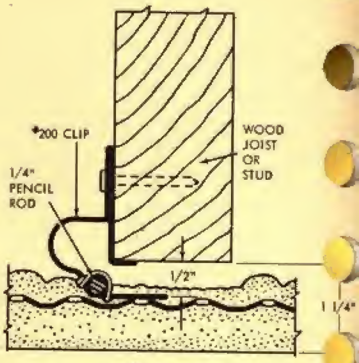
wall

RESILIENT METAL LATH

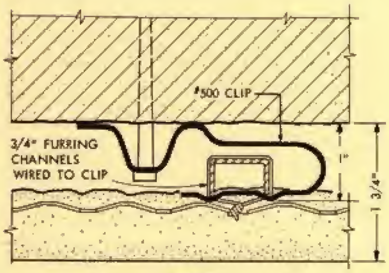
No Scale



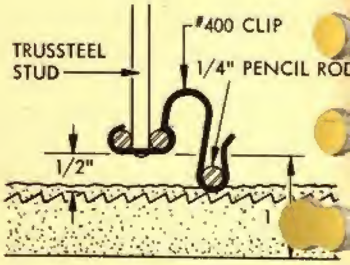
ceiling



ceiling or wall



wall



partition

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*T.M. Reg. U. S. Pat. Off.

SPECIFICATIONS | ROCKLATH

Notes to Architect: *Following are complete specifications for Rocklath plaster bases, including nail-on and clip attachment, and partition systems. Select paragraphs required to complete particular job specifications, taking into account the type of lath, type of plaster and minimum plaster thickness required by certain systems and fire ratings:*

Where sound Transmission Loss is a design consideration, use sand aggregate to provide mass for maximum sound transmission loss.

When sound is a major factor, contact your U.S.G., Architecture Service Representative or the Architect Service Dept., Chicago, for recommendation.

Where lath and plaster ceilings are located under roof construction, it is recommended that the space thus established be ventilated. Such ventilation, with or without vapor barrier and insulation, shall be designed in accordance with accepted engineering practice.

Where reinforced concrete or concrete fireproofed structural steel construction is used, it is recommended that relief from stresses imposed by such members be provided by locating the partitions so that the face of the plaster does not continue in the same plane across the face of such columns or beams. If partitions are not so located, one of the methods given below should be used to provide partial isolation from the faces of the structural members, in the following order of preference:

1. Furring away from the face of such members.

2. By allowing the Rocklath *to carry across the faces of such structural members.*

3. By scatter nailing No. 30 asphalt felt then 2.5 lb diamond mesh metal lath across the faces of such structural members, carrying felt and metal lath out at least 1" onto the Rocklath *and stapling to the* Rocklath.

I. SCOPE

Unless otherwise indicated, all walls, partitions and ceilings are included.

II. GENERAL CONDITIONS

In cold weather, building should be glazed and heated before lathing.

III. MATERIALS

A. Gypsum Lath—Shall be Rocklath Plaster Base manufactured by United States Gypsum Company in the following types and sizes as required:

1. (Plain) (Perforated) (Insulating Rocklath) (⅜") (½") thick by 16" x 48".

2. Long length Rocklath ½" thick, 24" wide and ceiling high lengths, with "V" edges.

3. Long length insulating Rocklath ⅜" thick, 24" wide, and ceiling high lengths, with square edges.

B. Cornerite—Shall be USG Cornerite.

C. Corner Bead—Shall be USG
(1A Expanded Flange)
(4A Flexible Solid Flange Corner Bead)
(For ¾" Bull Nose Bead specify either 10A Expanded Flange or 5A Short Flange)

D. Channels shall be USG ¾" and 1½" Cold Rolled Painted Channels. (Other Main Carrying Channels as required. See table, page 23.)

E. Striplath shall be 4" or 6" wide USG Striplath.
Metal Lath Reinforcement at door and window opening shall be 13½" x 19" or 9" x 48" pieces of 2.5 lb. Self Furring Lath.

F. Resilient Clips—Shall be USG
(R-1—Resilient Clips for wood stud or joist framing)
(R-2—Resilient Clips for corners and angles, wood frame construction)
(R-3—Resilient Clips of ¾" channels, ceilings only)
(R-5—Resilient Clips for masonry construction)

G. BRIDJOINT Clips—Shall be USG
(B-1—Field Clips for (⅜") (½") Rocklath plaster base)
(B-1A—Field Clips for (⅜") plaster base)
(B-2—Corner Clip for ⅜" Rocklath only)

H. BRACE-TITE Clips—Shall be USG Brace-Tite Clips
(BT-1—For ¾" Channels)
(BT-A—For Acoustical base)

Trus-Lok TL-1 field clips and TL-2 starter finisher clips manufactured by United States Gypsum Co.

I. TRUS-LOK Clips—Shall be USG Trus-Lok TL-1 field clips and TL-2 starter-finisher clips manufactured by United States Gypsum Company.

J. Ceiling Runner—For solid Rocklath and plaster partitions shall be USG L-shaped Ceiling Runner and ceiling runner clips for attaching long length Rocklath to ceiling construction.

K. Furring Brackets—Shall be USG Adjustable Wall Furring Brackets.

L. Bracing Clips—Shall be USG bracing clips for temporary bracing of solid Rocklath and plaster partitions.

M. Metal Studs—Shall be (1⅞″) (2½″) (3¼″) (4″) (6″) Trussteel Studs, and accessories.

N. Metal Base—Shall be USG 2½″ high flush metal base with double, single, masonry and stud clips as required.

O. Lath Nails—Shall be 1⅛″ (1¼″ for ½″ Rocklath), 13 gauge, blued, 19/64″ flat head, smooth diamond point nails.

P. Staples—For attachment of Cornerite, Corner Bead and Striplath shall be gummed finish steel having 9/16″ legs and designed for mechanical driving.

Q. Hangers—Shall be (9 gauge) (8 gauge) galvanized annealed wire, (3/16″) (¼″ rods) (3/16″ x 1″ mild steel flats).

R. Tie Wire—Shall be 16 gauge and 18 gauge galvanized annealed wire as hereafter specified.

S. Tie-In Shoes—Shall be 12″ lengths of Cornerite or L-type ceiling runner.

T. Access Panels—Shall be USG (8″x8″) (12″x12″) (14″x20″) (22″x24″) (Will be furnished by others and installed under this section).

IV. GROUNDS

Shall be set to provide the following minimum plaster thickness including finish over the Rocklath plaster base:

a) ½″ on wood frame or metal stud.

b) (¾″) (⅞″) (1″) each face on Solid Rocklath and plaster partition system.

c) (½″) (⅝″) (1″) on Brace-Tite lathing system.

d) ¾″ on long length Rocklath exterior wall furring system.

e) (½″) (⅝″) (1″) (1¾″) for Rocklath column fireproofing.

V. ERECTION

A. Nail-On to Wood Framing Member:

Rocklath plaster base shall be applied face out with the long dimension at right angles to the framing members. The end joints shall be staggered to fall on different supports in adjacent courses, or the Rocklath shall be erected so that the end joints are continuous on a support. In the latter case the continuous joints shall be covered with 3-inch striplath and the long or edge joints shall be offset or staggered. In all cases, Rocklath joints shall be butted together. Space nails approximately ⅜″ from edges and approximately 5″ apart, using four nails per lath per support. (For ½″ Rocklath with supports more than 16″ o.c. nails must be spaced approximately 4″ apart using 5 nails per lath per support.) Cut accurately and fit Rocklath plaster base neatly around all electrical outlets, etc. All internal angles shall be reinforced with cornerite over the Rocklath and all exterior angles shall be reinforced with corner bead secured to the Rocklath by stapling.

Optional—Power Driven Staples

Where ⅜″ gypsum lath is attached to wood framing members with pneumatic power driven staples, they shall be not less than 16 gauge flattened galvanized wire. Staple crown—flat, ½″ wide. Staple legs—⅞″ long with divergent points. Inside crown length shall be such as to provide not less than .090 square inches of bearing per width of lath per framing member. Staples shall be driven with the crown parallel to the long dimension of the framing member, using not less than 4 staples per 16″ width of lath per framing member and not more than 5″ o.c., in such a manner that the crown bears tightly against the lath but does not cut into the face paper. The legs of the staples shall not be closer than ⅜″ from the ends and edges of the lath.

All openings in walls or ceilings over 2 square feet in area shall have 4″ or 6″ strip lath applied to the lath diagonally at all corners of the opening.

B. BRIDJOINT Lathing System

1. For Wood Framing—Rocklath shall be nailed to the framing members in such a manner that the end joints of the lath (16″ dimension) do not fall on framing members and are staggered in adjacent courses. End joints shall be secured to adjacent lath by use of a B-1 Bridjoint Field Clip at each corner of each lath. The internal corners of lath may be secured to each other by the use of B-2 Bridjoint corner clips. In lieu of B-2 clips, Cornerite may be stapled to the Rocklath. Corner Bead shall be applied to all exterior angles by stapling to Rocklath plaster base. Do not nail Rocklath to framing members in the angles.

2. For Nailable Steel Framing—Rocklath shall be nailed to the framing members, using a nail with a ⅜″ head and of sufficient length to provide proper "lock" in the nail retention curve or as recommended by the manufacturer of the framing member, in such a manner that the end joints of the lath (16″ dimension) do not fall on the framing members. End joints shall be staggered in adjacent courses and shall be secured to adjacent lath by use of B-1 clips at each lath corner. Nail Rocklath to framing members in the angles. Cornerite shall be applied to interior angles and corner bead to exterior angles by stapling to the Rocklath plaster base.

C. Resilient Lathing System

Rocklath plaster base shall be applied face out with the long dimension at right angles to the framing members and with end joints staggered and over framing members. Rocklath shall be attached to the framing members by means of R-1 Resilient Clips nailed to framing and placed at every intersection of Rocklath edges with framing members, and at corners with R-2 Resilient Clips so that the Rocklath is secured by the clips spaced

16″ o.c. in both directions. Corner Beads shall be stapled to ROCKLATH. Under no circumstances shall ROCKLATH plaster base be attached directly to the framing.

For resilient ceiling attachment with nail-on side wall, shim the perimeter of the ceiling with a 2″ strip of ⅜″ ROCKLATH nailed to joists, place a B-2 BRIDJOINT Corner Clip on top course of wall ROCKLATH and nail bottom third of this course only. Insert ceiling ROCKLATH into B-2 clip at the angle, attach resilient clips to other edge and proceed with resilient application on ceiling.

D. Resilient Lathing System for Masonry

R-5 Resilient Clips shall be used for the attachment of ROCKLATH to masonry walls by placing the clips not over 16″ o.c. along the long edge of the lath. ROCKLATH shall be erected with long dimension horizontal, with end joints staggered in adjacent courses. End joints of lath shall be secured to the adjacent lath by use of an R-5 Resilient Clip at each corner of the lath.

Each clip shall be anchored to the masonry wall by nailing with 10d cut nails driven into the mortar joints or into the solid sections of masonry units using 2″ staples driven at angle with one leg over clip base or by toggle bolting into hollow sections of such units.

E. Grillage for Suspended Ceilings (BRACE-TITE)

Hangers shall be placed not over 3′0″ o.c. along main runner direction and not over 4′0″ o.c. in opposite direction and 6″ from boundary walls or beams. They shall be of sufficient length to provide proper anchorage to main runners. 1½″ cold rolled main runners shall be installed not over 4′0″ o.c., properly leveled at designated height and hangers secured to runners not over 3′0″. Channel ends shall be spliced not less than 12″ with a double strand of tie wire near each end of splice. ¾″ cold rolled channel cross furring shall be saddle tied to runner channel (12″) (16″) o.c. and 2″ from parallel walls, beams and troffers, with double strand of 16 gauge tie wire. Channel ends shall be lapped 8″ and tied near each end of splice with double strand of tie wire. The channel ends must extend to the plane of the abutting side wall and top flange of channel end bent up to prevent clips from sliding off.

F. Grillage for Furred Ceilings (BRACE-TITE)

¾″ cold rolled channels shall be saddle tied to steel joists (12″) (16″) o.c. and 2″ from parallel walls, beams or troffers with double strand of 16 gauge tie wire. Channel ends shall be lapped 8″ and tied near each end of splice. The channel ends must extend to the plane of the abutting side wall and top flange of channel end bent up.

G. BRACE-TITE Lathing System for Plaster

Place a BRACE-TITE starter clip over the end of the ¾″ channel at the point where it meets the starting wall. ROCKLATH Plaster Base shall be applied with the long dimension at right angles to the ¾″ channels. ROCKLATH shall rest on top of the starter clip loops, and shall be fastened to each channel with a BRACE-TITE field clip. ROCKLATH end joints shall fall between channels and shall be secured with USG B-1 BRIDJOINT field clips on both sides. Succeeding courses of ROCKLATH Plaster Base shall be attached with BRACE-TITE field clips hooked over the channel and fastened into the eyes of the preceding clips. End joints of ROCKLATH, in adjacent courses, shall be staggered. The last course of ROCKLATH shall be cut to the width required to fill the remaining space. The BRACE-TITE field clip used for this final course shall be inserted through the eye of preceding clip, pulled tight into eye and excess length cut off.

Where ¾″ channel runs are interrupted by light troffers, grilles, etc., BRACE-TITE starter clips shall be used to start a new course of ROCKLATH. For these locations, the extended leg of the starter clip shall be cut off so as not to protrude below the brown coat of plaster.

Angles between the ceiling and all vertical plastered planes shall be reinforced with USG Cornerite stapled to the ROCKLATH.

(For 2 or 3 hour fire rating) Lengths of 14 gauge wires shall be run diagonally across ceiling through the BRACE-TITE clip loops. (For 4 hour rating Staple 20 gauge hexagonal mesh to lath and wire tie mesh to furring channels at long edge of lath.)

H. BRACE-TITE Lathing System for Adhesive Application of Acoustical Tile

Place the full loop end of a BRACE-TITE Acoustical Clip over the end of each of the ¾″ channels at the point where it meets the starting wall. ROCKLATH Plaster Base shall be applied with the long dimension at right angles to the ¾″ channels. ROCKLATH shall rest on top of the BRACE-TITE Acoustical Clip and the half loop end snapped over the ¾″ channel to secure the lath tight against the channel.

ROCKLATH end joints shall fall between channels and shall be secured with B-1A BRIDJOINT Clips to adjacent lath on both sides, flat side of clip on tile side. Succeeding courses of ROCKLATH Plaster Base shall be attached with BRACE-TITE Acoustical Clips hooked over the channel behind the loop of the previous BT-A Clip and carried across the ROCKLATH face snapping the half loop end over the channel. End joints of the ROCKLATH plaster base shall be staggered in adjacent courses.

The last course of ROCKLATH shall be cut to the width required to fill the remaining space. The BRACE-TITE Acoustical Clip shall be hooked over the ¾″ channel where it meets the end wall, cut off approximately 2″ longer than the piece of ROCKLATH it is supporting, and wire tied to the ¾″ channel with loop of 18 gauge tie wire. The last course of ROCKLATH may be applied either at the end wall or in the field of the ceiling.

Where ¾″ channel runs are interrupted by light troffers, grilles, etc., the BT-A Clip is reversed and ROCKLATH installed in the same manner as the finishing course.

I. Resilient Lathing System for Suspended Ceilings

R-3 Resilient Clips shall be used for the attachment of ROCKLATH plaster base to ¾″ cold rolled ceiling channels spaced 16″ o.c. by placing the lath at right angles to the channels, hooking the clips over the top flange of the channel and inserting the lath edge into the prongs of the clip. End joints shall fall under the channels and shall be staggered in alternate courses.

J. TRUSSTEEL Stud ROCKLATH Partition

Runner tracks shall be aligned accurately according to partition layout and secured to concrete slabs with ½″ concrete stub nails not more than 24″ on center, or wire-tied to suspended ceilings not more than 16″ on center. Where TL-3 Finisher Clips are to be used at ceiling angles, runner track must be secured to concrete slab with firm attachment equivalent to power driven anchors spaced not more than 24″ on center. Use runner track at top of door frames and over and under borrowed lights.

Studs shall be placed vertically in the runner track not over 16″ on center and each stud shall be secured to runner track with two attachment shoes both at top and bottom. Each pair of attachment shoes shall be wire-tied around stud with double strand of 18-gauge galvanized tie wire. Use two ties for stud shoe attachment on studs adjacent to and over door or light frames.

Studs shall be located approximately 2″ from all door frame jambs, abutting partitions, or other construction. With steel frames, an additional anchorage stud is required at each jamb. All corners shall be framed with a stud approximately 2″ from each side of the internal angle. Securely wire-tie studs adjacent to door or light frames to the jamb anchors. Brace and align studs adjacent to frames with horizontal ¾″ channel wire tied to each stud 4″ to 6″ over top of frame.

Light frames, in addition to anchor inserts in the side jambs, shall have anchor insert clips in head and sill sections not over 24″ o.c. to provide attachment for runner track or studs used as runners.

Use runner track at head of frame to receive studs over opening, runner to turn up 4″ each side at the jambs and wire-tied to studs used as door frame struts. Secure studs to angle inserts by engaging in notches and wire-tying securely in place, using double strand of 18-gauge tie wire.

Start lath application at the bottom with long dimensions of ROCKLATH at right angles to the stud. The first course of lath shall be set in TL-2 Starter Clips spaced approximately 16″ o.c. along the runner track and secured to the studs by TL-1 Field Clips hooked around the stud and over the top of the lath. The end joints of the ROCKLATH shall occur between studs, staggered in alternate courses, and joined together at corners with B-1 BRIDJOINT Clips.

Where wood grounds are wire-tied to the studs the lath shall be held in place by driving a nail into the ground at each stud with the nail head flush against the lath.

Succeeding courses of ROCKLATH shall be attached to studs using TL-1 Field Clips. B-1 Clips shall be inserted at all ROCKLATH and joints. TL-3 Finisher Clips shall be installed at juncture of wall and ceiling in accordance with manufacturer's recommendations.

In areas where plaster chalkboard or tackboard are to be used, install USG 7-A curved point base screed or casing bead, wire tied to the lath, to outline the chalkboard and tackboard areas. All corner joinings should be properly mitered. The 1″ ground on the base screed shall face the chalkboard and/or tackboard surface. All screed installation should be level or plumb unless specifically indicated.

The course of lath immediately over metal frames shall be set in a groove provided in the grout, if grout is used or shall be set in TL-2 Clips clipped to the runner track, or shall be wire-tied to the studs over a nail on the face of the lath.

Cornerite shall be used on all internal angles, and corner bead at external corners, by stapling to ROCKLATH plaster base. Metal lath reinforcement over frame corners shall be 13½″x19″ pads or 9″x48″ strips of 2.5 lb. self-furring lath stapled to ROCKLATH plaster base.

NOTES: RELATED INCLUSIONS

Door and Light Frames

Under appropriate section of the specification indicate metal door and light frames shall be formed of not less than 16-gauge steel, shop primed. Secure anchorage to the floor shall be by two power driven anchors or equivalent attachment through a clip at each jamb that is welded each side of jamb face and to flange returns or to flanges to prevent *rotation. Anchor inserts shall be welded in each jamb to face and flange returns or to flanges at top, 12" down from top and then at approximately 24" o.c.*

Finished width of partition will be 2" over nominal stud width and door frames must be furnished to provide required over-all thickness out-to-out of plaster.

If wood door bucks are to be used under appropriate section of the specifications call for rough bucks of same width as studs, and of not less than 1⅝" stock with the jambs running to underside of construction above and well anchored top and bottom.

Base or Grounds

Under appropriate section of the specification call for base or grounds as follows:

For USG 2½" Metal Base, specify the attachment of the base with USG Stud Base Clips for Metal Base wire-tied over ROCKLATH to the stud.

For portland cement base, specify a USG 7A base screed wire-tied over the ROCKLATH plaster base to the studs at indicated height and 2.5 diamond mesh strip lath stapled to ROCKLATH to receive portland cement plaster. For terrazzo specify terrazzo base strip.

For wood base, specify a ⅞"x2½" wood ground strip wire-tied to the studs over stud shoes.

For asphalt tile base cemented to plaster, specify either a ½" x 1" wood ground strip wire-tied over ROCKLATH to studs, or a plaster screed, to insure ½" plaster over ROCKLATH plaster base.

Wherever metal trim is to be applied over the plaster, such as for chalk-boards, plaster screeds should be required to provide true surfaces to receive trim. Attachment clips should be toggle bolted in place.

Fixture Attachments (See Detail, pages 7 & 8.)

Plaster Chalkboards—Chalkboards may be formed on any wall by outlining the board area with bead or casing, applying a high strength, dense basecoat of gypsum plaster to the thickness provided by this trim and finishing with a hard, dense Structo-gauge lime finish coat power trowelled to a smooth uniform surface. This surface is finished with one coat of primer sealer and two coats of chalkboard paint. (For plasters see USG Gypsum Plasters folder, AIA 21-A-2.)

K. 2" Solid ROCKLATH and Plaster Partition

Metal Base shall be attached to rough floor by nailing clips not over 24" o.c. according to partition layout. Snap side plates over clips, cutting and bending at corners as required. (If wood floor runner is used, specify in carpentry section.)

Ceiling Runner shall be properly aligned over floor runner and securely attached.

Tie-In Shoes shall be attached to exterior walls, columns, abutting partitions, etc., by nailing, wire tying or stapling, as required, at third points of partition height.

ROCKLATH Plaster Base shall be cut in lengths to allow ¼" minimum and 1¼" maximum top clearance in the ceiling runner. The ROCKLATH shall be erected vertically, engaging the bottom in the groove of floor runner and either tying or clipping top to ceiling runner. Vertical edges of ROCKLATH shall be kept as plumb as possible and the V-joint edges be brought into close contact one with the other. No vertical cut edges of lath shall be used in the central portion of partition. The use of lath having cut edges shall be confined to the ends of the partition or at door bucks. ROCKLATH shall be neatly cut for electrical conduit, other piping or door struts, and one side shall be covered with paper-backed metal lath fastened to the ROCKLATH. Where ROCKLATH Plaster Base intersects other partitions, exterior walls or columns, it shall be wire tied or fastened to tie-in shoes at the third point of height.

For partitions not over 9'0" in height, bracing shall consist of ¾" cold rolled channels erected horizontally, with flanges turned down, just below mid-point of height. The bracing member shall extend the full length of the partition and shall be fastened to the lath by the use of tie wires looped over the channel, or USG wire bracing clip, at center of the lath in such a manner as to keep the lath joints together as well as securing the channels to the lath. It shall be similarly wire tied or clipped to the lath at channel ends.

For partitions over 6'0" in length, the horizontal braces shall be reinforced by vertical struts every 6'0" or fraction thereof formed from 1½"x1½" angles (or heavier materials) fastened securely at the bottom and wedged firmly against the construction at the head. Vertical struts shall be securely wire tied to horizontal braces.

For partitions over 9'0" in height, two horizontal braces at third points shall be used. Attach to lath in a similar manner as above.

Seasoned wood bracing members may be used in lieu of metal bracing, provided they are attached in a similar manner to hold lath rigid during initial plastering stages.

Pipe chase hollow partitions shall be constructed using two ceiling runners and two floor runners, erected to provide hollow space indicated on the plans. Horizontal ¾" channels shall be erected at third points of height and secured to (tie-in shoes at third points of height of abutting partitions) (vertical ¾" channels erected at both ends of pipe chase) and to intermediate vertical ¾" channels not over 4'6" o.c. Horizontal channels shall be cross-braced not over 30" on center with channel brackets, wire tied to horizontal channels. Long length ROCKLATH, ½" thick and V-edge, shall be set in floor runner, clipped or wire tied to ceiling runner, and wire tied over a nail to each intermediate horizontal channel.

NOTES: RELATED INCLUSIONS

Door Frames—*Shall be as specified elsewhere. Wood frames shall be milled according to details, of select stock, resistant to splitting and prime coated if stop is integral with the frame. Wood floor runner may be used as rough buck if separate jamb plus casing is to be used. After* ROCKLATH *Plaster Base is set in the groove, 8d coated nails shall be driven in at a 45° angle each side, approximately 12" o.c., and bent over against the lath for subsequent anchorage in the plaster. Separate bracing is required to keep buck in alignment with partition and, in addition, a door templet will be required when integral finish is used.*

Steel frames shall be furnished with clip inserts for centering ROCKLATH *in partition. If door frame struts are furnished, they shall not exceed 5/8" in size in direction of partition thickness.*

Fixture Attachment—*Lightweight fixtures and trim shall be installed by drilling set dry plaster to a minimum depth of 3/4" and inserting a plastic plug for anchorage of attachment screws.*

Cabinet and shelving grounds shall consist of 3/4" (actual dimension) by 1 1/2" wood strips, having 6d (minimum) coated nails driven 5/8" into both edges at not over 12" o.c., attached to the ROCKLATH *by nailing, wire tying or bolting.*

Lavatory and sink hangers on solid partitions shall be installed by wire tying an 18 gauge perforated plate of size equal to hanger (maximum 6"x24") to opposite side of the lath and placing hanger bolts prior to plastering.

Ceramic Tile—*(Where ceramic tile is required over* ROCKLATH, *self-furring diamond mesh metal lath shall be stapled over the* ROCKLATH *plaster base with staples spaced approximately 8" on center, horizontally and vertically, and portland cement-lime plaster shall be applied in scratch and brown coats to 5/8" grounds over lath as a base for the ceramic tile) or (Ceramic tile shall be adhesively attached over the finished gypsum plaster in accordance with adhesive manufacturer's specifications.)*

Electrical Work—*Electrical conduit and outlet boxes shall be specified elsewhere. Embedded conduit size shall not exceed 1/2" rigid. Switch boxes and convenience outlet boxes shall not exceed 1 1/2" in depth and, if plaster ring is used on 4"x4" convenience outlet boxes opening one side only, the box shall not exceed 1 1/4" in depth, to provide 1/2" of plaster on the back side.*

L. Exterior Wall Furring System

Single Metal Base shall be attached to rough floor by nailing clips not over 24" on center. Snap the side plate over the clips, cutting and bending at corners as required. (Alternate: Wood runner shall be attached to the rough floor by nailing with cut nails or concrete stub nails in the center groove or through alternate outside edges not over 16" on center.) (If metal base is used, base must be grouted before erection of lath.)

Attach ceiling runner to the construction above as required, plumbing up from the floor runner, or install furring channel 6" from top as specified below.

Attach furring brackets, with serrated edges up, to the masonry walls not over 4" from columns or other abutting construction and not over 36" on center horizontally and vertically, and as required above and below windows, using (one 2" cut nail in mortar joints of brick, clay tile, or cement block or in the field of lightweight aggregate blocks) (5/8" concrete stub nails or power driven nails or other suitable fasteners in monolithic concrete). Fastenings shall be driven through top hole of bracket. Furring channels shall be laid horizontally on the furring brackets with the legs down, plumbed to a line with the ceiling runner and base, and wire tied to the bracket with a double strand of 18 gauge tie wire. Excess bracket length shall be bent down.

Long length, 3/8" Insulating ROCKLATH shall be applied with the long length vertical and butted lightly, with the foil facing the furred space, by setting bottom of lath in the groove of the base grout, clipping top of lath to the ceiling runner and wire tying over a nail at the edges to intermediate horizontal channel furring. Cut and fit gypsum lath to allow slight clearance around window frames. Apply a 3" strip of metal lath over each ROCKLATH joint over and under windows.

M. Column Fireproofing ROCKLATH and Plaster

(**Note to Architect:** *For 1, 1 1/2, 2 or 3 hour fire rating, use following lathing specification.)*

Apply 3/8"x16"x48" Perforated ROCKLATH vertically against the column flanges and bridging the web spaces, cut as required, fastened with double strands of 18 gauge galvanized tie wire located approximately 2" from ends of the lath and about 15" on center at intermediate points and wrapped around the perimeter of the column. USG 1A Expanded Flange Corner Bead shall be set at each corner to establish (1/2") (5/8") (1") (1 3/4") plaster thickness over the ROCKLATH plaster base by wire tying to the double strands of 18 gauge wire.

Note to Architect: *For 4 hour Fire Rating, use following lathing specification:*

Apply a double thickness of 1/2"x24" long length ROCKLATH vertically against the column flanges and bridging the web spaces, cut as required and fasten with a double strand of 18 gauge galvanized tie wire located about 4" from top and bottom and 24" on center at intermediate points and wrapped around perimeter of column. One inch hexagonal 20 gauge galvanized wire fabric shall be wrapped tightly around the column over the ROCKLATH. USG 1A Expanded Flange Corner Bead shall be wire tied to each corner to provide 1½" plaster ground over the ROCKLATH plaster base.

Notes to Architect: *Paragraphs I, II, etc., are recommended as basic requirements for all metal lathing specifications. Paragraphs S-1, S-2, etc., apply to the erection of lath for various constructions and only those applicable to the job should be included.*

Where lath and plaster ceilings are located under roof construction, it is recommended that the space thus established be ventilated. Such ventilation, with or without vapor barrier and insulation, shall be designed in accordance with accepted engineering practice.

Where reinforced concrete or concrete fireproofed structural steel framing is used, it is recommended that partitions be located so that at least a 1" offset in plaster face is provided at juncture of partitions with columns and/or beams, or that either of the following procedures be employed:

1. Furring off the face of such members so that there is at least 1" between back of metal lath and such faces.

2. By scatter nailing, 12" o.c., No. 30 asphalt felt and the metal lath across the faces of such structural members.

Where sound Transmission Loss is a design consideration, use sand aggregate to provide mass for maximum sound transmission loss.

When sound is a major factor, contact your U.S.G., Architecture Service Representative or the Architect Service Dept., Chicago, for recommendation.

I. SCOPE

Unless otherwise indicated, all lathing and furring shall be of metal, as herein described. (Or enumerate the areas.) Partitions shall be accurately located as shown on plans.

II. GENERAL CONDITIONS

In cold weather, buildings shall be glazed and heated before lathing.

III. MATERIALS

Unless specifically noted otherwise, all materials herein listed shall be protected by a coat of rust inhibitive paint after fabrication, bundled or packaged with positive identification.

A. Metal Lath

Shall be USG metal lath, manufactured by the United States Gypsum Company, made from copper alloy steel sheets. Lath shall be colored to identify weight (red for 3.4, white for 2.5 diamond mesh and 2.75 flat Rib Lath: yellow for 4.0 Rib Lath) and shall be provided in the following types and sizes:

(2.5 lbs.) (3.4 lbs.) USG Junior Diamond Mesh Lath —size: 27" x 96".

(3.4 lbs.) USG Junior Diamond Mesh Lath galvanized —size: 27" x 96".

(2.5 lbs.) (3.4 lbs.) USG Junior Diamond Mesh—self-furring lath—size: 27" x 96".

(2.75 lbs.) (3.4 lbs.) USG 4-mesh Z-Rib Lath—size: 27" x 96".

(3.4 lbs.) (4.0 lbs.) USG ⅜" Rib Lath—size: 27" x 96".

(1.8 lbs.) (3.6 lbs.) USG Expanded Metal Stucco Mesh—1⅜" x 3⅛" mesh.

B. Lathing Accessories

1. Channels shall be 16-gauge cold rolled steel channels, as manufactured by the United States Gypsum Company.

(a) ¾", weighing not less than 300 lbs. per 1,000 lineal feet.

(b) 1½", weighing not less than 514 lbs. per 1,000 lineal feet.

(c) Other (see table, page 23).

2. Pencil Rods for furring shall be not less than ¼" in diameter and of mild steel.

3. Hangers shall be (8-gauge) (9-gauge), galvanized annealed steel wire, (³⁄₁₆") (¼" Rods) (³⁄₁₆" x 1" mild steel flats).

4. Tie Wire shall be 16-gauge and 18-gauge galvanized annealed steel wire, as specified herein.

5. Corner Bead—Shall be USG, as follows:
1-A Expanded Corner Bead
4-A Flexible Corner Bead
5-A Bull Nose Corner Bead
10-A Expanded Bull Nose Corner Bead

6. Corner Bead Clips—Shall be USG No. 9-A Corner Bead Clips—galvanized steel.

7. Base Screed—Shall be USG
3-A Expanded Base Screed
6-A Plain Base Screed
7-A Curve Point Base Screed
8-A Picture Mould

8. Casing Bead—Shall be USG
No. 4 Expanded Flange Quarter Round
No. 138 Short Flange Quarter Round
No. 60 Expanded Flange—Semi-Square
No. 60 Short Flange—Semi-Square
No. 66 Expanded Flange—Square
No. 66 Short Flange—Square

9. Cornerite—Shall be USG Selv-edge Cornerite, (2″ x 2″) (3″ x 3″).

10. Striplath—Shall be USG Selv-edge Striplath, (4″) (6″).

11. 2″ Partition Terminal—Shall be composed of a cap formed of 18-gauge steel, welded to 24-gauge punched runner, as manufactured by United States Gypsum Company.

12. Metal Studs—Shall be TRUSSTEEL studs, manufactured by United States Gypsum Company, formed with not less than 7-gauge wire. Stud sizes shall be as indicated on drawings or as follows: (1⅝″) (2½″) (3¼″), (4″), (6″).

13. TRUSSTEEL Stud Runner Track—Shall be: (Regular track and shoes) (snap-in runner track).

14. Ceiling Runner—As manufactured by United States Gypsum Company shall be:
L Type
Z Type

15. Metal Base—Shall be 2½″ high, face plate formed from 18-gauge steel, weighing not less than 600 lbs. per 1,000 lineal feet and as manufactured by the United States Gypsum Company complete with:
Splice plates
Single base clips for furred walls
Double base clips for 2″ solid partitions
Stud base clips for hollow stud partitions
Masonry base clips for masonry walls

16. Floor Runner and Screed—Shall be a combination base and screed as manufactured by the United States Gypsum Company.

17. Metal Lath Resilient Clips—Shall be as manufactured by the United States Gypsum Company:
No. 100 for Suspended Ceilings
No. 200 for Wood Studs and Joists
No. 400 for TRUSSTEEL Studs
No. 500 for Masonry walls

18. Wall Furring Brackets—Shall be USG galvanized steel adjustable wall furring brackets.

19. Access Panels—Shall be USG Steel Access Panels in sizes shown on details (furnished by others but installed under this section).

IV. GROUNDS

Unless otherwise specified, grounds shall be set to provide not less than ¾″ thickness of plaster measured from the flat portion of the back plane of the metal lath exclusive of ribs and be securely wire tied or nailed into place. (Note: Greater thicknesses are required for certain fire ratings.)

V. ERECTION OF METAL LATH

All metal lath shall be applied with the long dimension of the sheet across the supports. Rib lath shall be applied with the projections against the supports.

The ends of all lath shall be lapped not less than 1″. If end laps are made between supports, they shall be adequately laced or tied with No. 18-gauge tie wire. The sides of diamond mesh lath shall be lapped not less than ½″. The sides of rib lath shall be lapped by nesting outside ribs. Side laps shall be secured to every support unless otherwise specified, and shall be wire-tied between supports not to exceed 9″ intervals. All metal lath except ⅜″ riblath shall be started at one support away from the corner and be bent into the corner and carried on to the abutting wall. Where ⅜″ rib lath is used, it shall be butted into the corners and cornerite shall be applied over the abutting lath and wired at 6″ intervals along each edge in corners; cornerite shall be wire-tied along the edge only, not in the corner. All metal lath shall be placed so that the lower sheets overlap the upper sheets. Wherever possible, ends of lath in adjacent course shall be staggered.

Metal lath shall be secured to supports with 18-gauge tie wire at intervals not exceeding 6″. Ends of tie shall have three full twists, then bent up in the plane of the lath.

Corner Beads, Casing Beads, Base Screeds, Picture Molds, etc., shall be positioned by securely wiring to the metal lath at not more than 12″ intervals. Attachment to masonry or other solid construction shall be by nailing at intervals of not more than 12″. ½″ concrete stub nails shall be used for attachment to concrete.

VI. ERECTION OF GRILLAGES

A. Hangers shall be spaced not over (3′-0″) (3′-6″) (4′-0″) in the direction of the main runners and not over (4′-0″) (3′-6″) (3′-0″) in the direction at right angles to the main runners, and within 6″ of the ends of main runner runs and of boundary walls, girders or similar interruptions of ceiling continuity.

All hangers shall be of such lengths to (wrap around or be securely attached to steel beams or joists) (provide suitable anchorage in concrete by attachment to reinforcing steel, or by being looped and embedded 2″ in concrete) and to provide for full saddle tie to main runner at indicated height.

B. Main runners shall be placed not over (4′-0″) (3′-6″) (3′-0″) on center, properly positioned relative to the indicated ceiling height, leveled and hangers shall be saddle tied along runner.

Main runners shall not be let into nor come in contact with abutting masonry walls. Runner channels shall be located within 6″ of the walls to properly support the cross furring.

At main runner splices, the ends shall be overlapped not less than 12″, with flanges of channels interlocked, and securely tied near each end of the splice with double loops of No. 16 gauge tie wire.

C. Cross furring channels shall be spaced (12″) (13½″) (16″) (19″) (24″) and securely saddle tied with two strands of 16 gauge tie wire to (main runners) (steel joists).

Cross furring shall not be let into or come in contact with abutting masonry walls.

At splices of cross furrings, the ends shall be overlapped not less than 8″, with flanges of channels interlocked, and securely tied near each end of the splice with double loops of No. 16 gauge tie wire.

S-1. Nailing to Wood Supports

Metal lath shall be secured to framing at intervals not to exceed 6″ o.c. by one of the following methods:

1. Metal lath shall be attached to vertical (walls) framing members with:

(a) 4d common nails driven to ¾″ penetration and bent over to engage at least three strands of diamond mesh lath or a rib of rib lath.

(b) 1″ roofing nails, 7⁄16″ head, driven home and so as to engage at least two strands of diamond mesh or through the rib of rib lath.

(c) 1″, 14-gauge wire staples, driven home without crushing the lath strands and engaging at least two strands of diamond mesh lath or through the rib of rib lath.

2. Metal lath shall be attached to horizontal (ceiling) framing members with: 1½″, 11-gauge barb roofing nails with 7⁄16″ head, to engage at least two strands of diamond mesh or through the rib of rib lath.

S-2. Nailing to Nailable Steel Supports

Metal lath shall be secured to framing at intervals not to exceed 6″ o.c. with nails of size and type recommended by manufacturer of nailable steel supports.

S-3. Metal Lath Secured to Steel Joists

Metal lath shall be secured to the lower flanges of steel joists with one loop of 16-gauge tie wire, or two loops of 18-gauge tie wire, at intervals not to exceed 6″ o.c. Ends of tie wire shall be given at least three twists.

S-4. Metal Lath Attached to Rib Concrete Construction

Hangers for attaching metal lath directly to the underside of concrete joists form construction shall be provided with a loop or other deformation to positively enter the concrete or be secured to the reinforcing steel.

They shall be of not less than (2 strands of No. 14-gauge galvanized annealed wire when twisted as for tie wire) or (No. 10-gauge galvanized wire when struck over to support the lath). Hangers shall be spaced at not-to-exceed 5″ intervals along bottom of the joist.

Where spacing of concrete ribs exceeds 24″ center to center, there shall also be placed in the forms 12 gauge galvanized wire hangers midway between the concrete ribs, spaced not to exceed 36″ on centers. ¾″ furring channel shall be positioned parallel to the ribs and vertically as required by the indicated ceiling heights by saddle tying to these hangers. Metal lath shall be ⅜″ rib lath weighing not less than 3.4 lbs. sq. yd., securely attached to the underside of the concrete joist by twisting the No. 14-gauge wire hangers as for tie wire, or by clinching of other types of hangers, and by tying to the channels with No. 18-gauge galvanized annealed wire at intervals not exceeding 6″ o.c. A tie wire shall be placed at side laps of sheets between supports. Where spacing of concrete joists does not exceed 24″ center to center, the ⅜″ rib metal lath shall be securely attached to the undersides of the concrete joists by twisting the No. 14-gauge wire hangers as for tie wires or by clinching of other types of hangers.

S-5. Furred Ceiling on Wood Joists

16d common nails spaced to conform to spacing of furring members, shall be driven horizontally through each joist at least 2″ above the lower edge; the point and head to project equally from each side of joist.

Furring channel shall be attached at right angles to, and flush against, the bottom edge of the joists. Spaced at (12"), (13½"), (16"), (19") or (24"). Channel shall be secured by wire tying to each nail with (two strands of 16 gauge) or (four strands of 18 gauge) galvanized wire or other approved attachment of equal strength. Metal lath shall be attached to the steel furring with wire ties at intervals not to exceed 6".

S-6. Furred Ceiling on Steel Joists

Furring members shall be ¾" cold rolled channels and shall not exceed a spacing of (12") (13½") (16") (19") (24") and shall be erected at right angles to the steel joists. They shall be securely attached to the bottom flanges with (two strands of 16-gauge) or (four strands of 18-gauge) galvanized wire or other approved attachment of equal strength.

S-7. Metal Lath Vertical Furring

USG Adjustable Wall Furring Brackets shall be attached to the masonry walls not over 4" from columns or other abutting construction, and not over 36" on center vertically and horizontally, and as required above and below windows, using one 2" cut nail in top hole of bracket in mortar joints of brick, clay tile, or cement block or in the field of lightweight aggregate blocks, or using ⅝" concrete stud nails or power-driven nails in monolithic concrete. In masonry construction, brackets can be embedded in mortar joints as masonry is laid. Furring channels shall be laid horizontally on the furring brackets with the legs down, and wire-tied to the bracket with a double strand of 18-gauge tie wire. Excess bracket length shall be bent down.

Vertical members shall be not less than ¾" cold rolled channels. They shall be spaced (12") (13½") (16") (19") (24"). They shall be securely saddle-tied to horizontal members with a double strand of 16-gauge wire at each crossing, and shall be securely anchored to the floor and ceiling construction. Optional—Vertical ¾" channels may be secured to horizontal ¾" channels placed 6" from the floor and/or top of vertical channels. These horizontal channels to be secured to the wall in the same manner as specified previously.

(Note: Where dampproofing has been damaged in installation of attachments, it shall be pointed up with the same material before proceeding with the installation of the furring.)

S-8. Channel Studs, Metal Laths and Plaster SOLID PARTITION

Studs shall be not less than ¾" cold rolled channels spaced (16") (24"), securely anchored at floor by:

(Engaging tongue of the USG Double Metal Base Clip.)

(Engaging slot in USG floor runner and screed.)

(Bending ends of studs and nailing directly to concrete floors with concrete stub nails or nailing to wood runner fastened to floor.)

(Setting in holes of Z type ceiling runner nailed to wood runner or floor.)

(Wire tying to L type ceiling runner nailed to wood runner or floor.)

Studs shall be securely fastened to the soffit of the floor or roof above, or to the joists or to a suspended ceiling by:

(Inserting in Z type ceiling runner nailed or wire-tied to ceiling.)

(Wire tying to L type ceiling runner nailed or wire-tied to ceiling.)

(Punching studs through ceiling lath and wire-tying to furring channels.)

Top clearance shall be such that studs will not bow when erected.

Where 2-piece studs are necessary, they shall be spliced by lapping not less than 8", with flanges interlocked, and securely wire tying 1" from each end of splice.

Studs adjacent to openings shall be securely anchored to the frames or studs adjacent to frames may be omitted if other means of anchoring lath is provided and bucks are temporarily braced before plastering. Where wood bucks are used, 8d nails shall be driven in pairs into both jambs of the wood buck at intervals of 2', beginning 9" above floor, and channel studs securely wire-tied to the nails.

A horizontal reinforcing (⅛" by 1¼" flat iron) (⅜" diameter rod) shall be saddle tied to the channels 8" above top of door to the channel side and extend continuously past the first studs at full spacings beyond the line of door frame or buck.

Metal lath shall be secured, one side only, to each channel stud by 18-gauge galvanized tie wire at 6" intervals.

S-9. Studless Metal Lath and Plaster Solid Partitions

USG Metal Base (USG floor runner and screed) shall be securely attached to the floors by means of fasteners suitable to floor materials. (If wood runner is used specify in carpentry section.)

L-Type ceiling runners shall be located so that the metal lath will be in the center of the partitions and plumb. (Runners shall be fastened to concrete ceilings with stub nails or other approved means.) (Runners shall be fastened to metal lath ceilings with wire-ties at approximately 12″ spacings.)

3.4 lb. ⅜″ rib lath shall be erected with the long dimension of the sheet vertical (attached to floor runners) (Set in groove of grouted metal base assembly) and securely anchored to ceiling runners with wire ties 8″ o.c.

A wire tie shall be placed, approximately 9″ oc, where sheets nest. (Metal lath shall be wire tied to inserts of steel door frames.) (Where wood bucks are used, metal lath shall be wire-tied to USG L-type runner nailed not over 8″ o.c. to back of buck.)

Temporary bracing—Bracing shall be not less than ¾″ C.R. channel placed horizontally near mid-height of partition, tied to metal lath at 24″ o.c. and with 1½″ angle braces placed vertically not over 6′-0″ on centers. Wedge vertical braces at top and bottom and tie to ¾″ horizontal channel to hold lath in vertical position.

(**Note to Architect:** *Where metal door frames are used, they shall be furnished with inserts to which the metal lath can be wire-tied.*)

S-10. USG Metal Base

Metal base shall be notched to a neat miter in forming all angles. In continuous runs, ends shall be evenly butted and internally spliced with splice plates. Base shall be securely held in place by clipping to base clips at:

(16″ o.c. (TRUSSTEEL) (Channel) Studs)
(24″ o.c. studless solid plaster partitions)
(12 to 16″ o.c. masonry walls)

Base clips shall be secured by nailing to floor or masonry walls and by wire tying to metal studs.

S-11. Metal Lath Resilient System

USG Metal Lath Resilient System, where shown on plans or otherwise indicated in this specification, shall be:

(a) Suspended ceiling grillage. ¾″ channels shall be supported on USG clip No. 100, spaced (13½″) (16″) o.c. along the 1½″ carrying channels.

(b) Wood stud and joist framing spaced not over 16″ o.c. USG No. 200 clips shall be spaced 12″ o.c. along joists and attached with 4d common nails. USG No. 200 clips shall be spaced not over 16″ o.c. along the studs and attached with 4d common nails. ¼″ pencil rods shall be attached to inside of tongue on the clips and metal lath wire-tied to the pencil rods.

(c) TRUSSTEEL stud partitions. USG No. 400 clips shall be spaced not over 16″ o.c. along stud. A ¼″ pencil rod shall be attached to the notch on the flange of the clip.

(d) Masonry walls. USG No. 500 clips shall be spaced not over 18″ o.c. vertically supporting ¾″ furring channels not over 16″ o.c. USG No. 500 clips shall be attached to (gypsum tile with 2″ staples or 10d cut nails driven through hole in clip into solid section of tile) (brick or clay tile or masonry walls with 10d cut nails driven through hole in clip into the mortar joint). Channels shall be wired to the inside of the tongues of the clips with the legs of the channels against the clip. Metal lath is then wire-tied to the channels.

S-12. TRUSSTEEL Stud Partitions

Unless otherwise specified, all interior non-load-bearing partitions shall be (1⅞″) (2½″) (3¼″) (4″) (6″) TRUSSTEEL Stud partitions. TRUSSTEEL Stud runner tracks shall be aligned accurately according to partition layout and securely attached to floor and ceiling construction. Studs shall be erected vertically not to exceed (16″ o.c.) (19″ o.c.) (24″ o.c.) (depending on type and weight of lath used) (1⅞″ studs to be spaced a maximum of 16″) secured to floor and ceiling runner track according to manufacturer's recommendations. Framing shall provide studs located approximately 2″ from abutting partitions or wall constructions, at all openings and 2″ from each side of all internal angles. Securely wire-tie door frame anchors to the adjacent studs. Metal lath shall be wire-tied to the stud 6″ o.c. Brace and align studs adjacent to frames with a ¾″ horizontal channel wire-tied to each stud 4″ to 6″ over top of frame.

Related Inclusions

Door and Light Frames. Under appropriate section of the specifications indicate that metal door and light frames shall be formed of not less than 16 gauge steel, shop primed. For door frames secure anchorage to the floor shall be by 2 power driven anchors or equivalent attachment through a clip at each jamb that is welded to each side of the jamb face and flange returns or between the flanges, to prevent rotation. Anchor insert clips shall be welded in each jamb to jamb face and flange returns or to the flanges, at the top, 12″ down from top and then approximately 24″ o.c. using not less than 4 clips per jamb.

Light frames, in addition to anchor inserts in the side jambs, shall have anchor insert clips in head and sill sections not over 24″ o.c. to provide attachment for runner track or studs used as runners.

Frames shall be so designed to provide for finished plaster partition width and to permit the lath and plaster to enter into the frame even when grouted.

S-13. Beam Fireproofing

For beams and girders, framework shall be formed to contour in size shown on drawings, of ¾″ channels as follows:

(a) Where ¾″ channels are used for longitudinal furring, brackets shall be not more than 3′-0″ apart.

(b) Where ¼″ pencil rods are used, brackets shall not exceed 19″ apart.

(c) Where longitudinal furring is not used, brackets shall not exceed 13½″ on centers for 3.4 lb. diamond mesh metal lath, provided that at least one row of longitudinal channel shall be installed to hold work in proper shape.

Brackets shall be saddle tied to structural members with not less than four strands of No. 16 gauge wire. For tying longitudinal members to brackets, wire shall be not less than 16 gauge galvanized wire, and, for tying metal lath to rods or channels, wire shall not be less than 18-gauge galvanized wire.

Brackets shall be formed in accordance with details furnished by the architect. Brackets shall be securely wired, bolted or clamped to walls, ceilings, or structural members, as the case may require. For fastening brackets to various bases adequately strong anchorage shall be provided.

Metal lath shall be applied to the longitudinal channels or rods or direct to brackets and made to conform with the outline of the finished beam or cornice. Side laps shall not occur at the corners, but lath shall be carried around to the next members or corner strips shall be used at all corners.

S-14. Column Fireproofing

Lathing for fireproofing of columns shall be done by (applying self-furring diamond mesh lath formed to neatly fit the column and wire tied not over 6″ o.c. at all laps) (installing ¾″ channel brackets and studs properly spaced to provide design lines shown or to enclose pipes and ducts, as required. Attach diamond mesh metal lath wire tying it to channels with 18-gauge tie wire spaced not over 6″ o.c.). No. 1-A corner beads shall be wire tied to metal lath so as to provide plaster thickness specified or shown.

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TECHNICAL INFORMATION

SOUND CONTROL PRODUCTS

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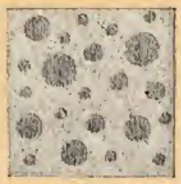
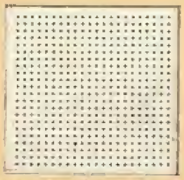
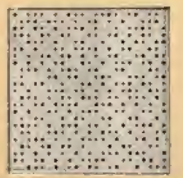
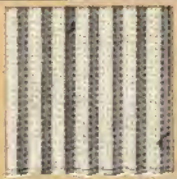
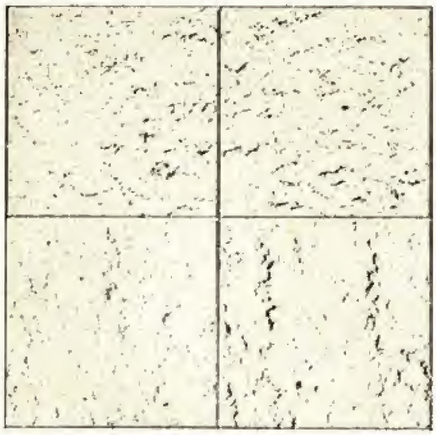
SOUND CONTROL PRODUCTS

PRODUCTS See Pages 22, 23, and 24 for all Specifications	**Thickness and Size**	**Edge Treatment**	**Methods of Installation**
 ACOUSTONE* "F" A fissured, light weight, mineral acoustical tile. Finish painted at the factory and available with accurately formed bevel or square edges. **Description: Pages 4, 5** **Details: Pages 8, 9, 10, 11, 12**	¾"x12"x12"	Square or Bevel	Adhesive
	¾"x12"x24"	Square or Bevel	Mechanically suspended on 1. Concealed Z-Spline. 2. E-Z-S Suspension System.
	¾"x12"x36"	Square	Mechanically suspended in E-Z-S Suspension System
 **MOTIF'D* ACOUSTONE*** The exclusive mineral acoustical tile available in 11 unusual designs. The designs are produced by heavier shadows caused by the "etched" portion of the tile rather than by difference in applied color. **Description: Pages 4, 5, 6** **Details: Pages 8, 9, 10, 11, 12**	¾"x12"x12"	Square or Bevel	Adhesive
	¾"x12"x24"	Square Linea Pattern Only	Mechanically suspended on E-Z-S Suspension System.
	¾"x12"x12"	Square	Mechanically suspended on Concealed Z-Spline.
 SLOTTED AUDITONE* The original slotted wood fiber acoustical tile designed with an exclusive functional appearance. The face and exposed bevels are finish painted WHITE at the factory. **Description: Pages 13, 14, 15** **Details: Pages 12 and 15**	¾" x 12" x 12"	Bevel	Adhesive
	¾" x 12" x 24"	Bevel & Center-Scored with Interlocking Tongue & Groove Edges.	1. Stapled, screwed or nailed to wood framing. 2. Screwed to Gypsum Board. 3. Mechanically Suspended.
 **PERFORATED AUDITONE** A perforated wood fiber acoustical tile designed to give maximum acoustical efficiency. The face and exposed bevels are finish painted WHITE at the factory. **Description: Pages 13, 14, 15** **Details: Pages 12 and 15**	½" x 12" x 12" ¾" x 12" x 12"	Bevel	Adhesive
	½" x 12" x 24" ¾" x 12" x 24"	Bevel & Center-Scored with Interlocking Tongue & Groove Edges.	1. Adhesive (½" only) 2. Stapled, screwed or nailed to wood framing 3. Screwed to Gypsum Board Base 4. Mechanically Suspended (¾" only)
 **RANDOM PERFORATED AUDITONE** A random perforated wood fiber acoustical tile designed for acoustical efficiency and beauty. The face and exposed bevels are finish painted WHITE at the factory. **Description: Pages 13, 14, 15** **Details: Pages 12 and 15**	½" x 12" x 12" ¾" x 12" x 12"	Bevel	Adhesive
	½" x 12" x 24" ¾" x 12" x 24"	Bevel & Center-Scored with Interlocking Tongue & Groove Edges.	1. Adhesive (½" only) 2. Stapled, screwed or nailed to Wood framing 3. Screwed to Gypsum Board Base 4. Mechanically Suspended (¾" only)
 **CORRUTONE PANEL** Corrugated, Perforated 28 ga., electro-zinc coated, bonderized steel. Face side painted with 2 coats of baked on enamel. Mineral fiber sound absorbing pads placed on top of steel panels. **Description: Pages 16, 17** **Details: Page 18**	1$\frac{5}{16}$" to 2$\frac{5}{16}$" 24" x 24" or 24" x 48"	Corrugated	Mechanically Suspended on E-Z-S Suspension System.
 PERFATONE* Perforated 26 ga. electro-zinc coated, bonderized steel painted both face and back with baked-on enamel finish. Also available in 35½H .025" thick aluminum units having bare mill finish, aluminized finish or painted both face and back with baked-on enamel. Units backed with choice of mineral fiber sound absorbing pads in flameproof paper. **Details: Page 20** **Description: Page 19**	2½" x 12" x 12" 2½" x 12" x 24" 2½" x 12" x 36"	Bevel & Center-Scored	Mechanically suspended on T-Bars.

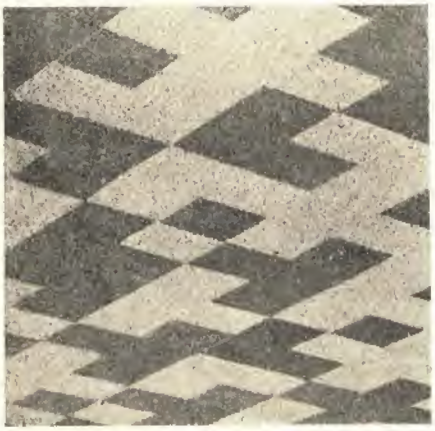
*Trademarks Reg. U.S. Pat. Off.

Efficiency (Noise Reduction Coefficient Spec. Range)	Colors Available	Light Reflection Coefficient	Heat Conductivity	Fire Resistance Rating Fed. Spec. SS-A-118b	Maintenance	Limitations
N.R.C. varies from range .65–.75 to range .70–.80 depending on type of installation. (See Technical Data Page 19)	White or Ivory.	81% White	k=0.35	Class-A "Incombustible"	Cleaned easily with vacuum cleaner or damp sponge. Can be repeatedly spray or brush painted.	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below wainscot height or exposed to impact, abrasion or tampering.
N.R.C. varies from range .65–.75 to range .70–.80 depending on type of installation (See Technical Data Page 19)	White or Ivory.	71% White	k=0.35	Class-A "Incombustible"	Cleaned easily with vacuum cleaner or damp sponge. Can be repeatedly spray or brush painted.	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below wainscot height or exposed to impact, abrasion or tampering.
N.R.C. range .60–.70 (See Technical Data Page 20)	Painted White	76%	k=0.38	Class-D "Combustible" Class-C Rated "Slow Burning" when mill-finished with U.S.G. Flame-Resistant Paint.	Cleaned with putty or paste type wall-paper cleaner. Can be repeatedly spray or brush painted.	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below wainscot height or exposed to impact, abrasion or tampering.
N.R.C. varies from range .50–.60 to range .65–.75 depending on thickness of tile and type of installation. (See Technical Data Page 20)	Painted White	79%	k=0.38	Class-D "Combustible" Class-C Rated "Slow Burning" when mill-finished with U.S.G. Flame-Resistant Paint.	Cleaned with putty or paste type wall-paper cleaner. Can be repeatedly spray or brush painted.	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below wainscot height or exposed to impact, abrasion or tampering.
N.R.C. varies from range .45–.55 to range .60–.70 depending on thickness of tile and type of installation. (See Technical Data Page 21)	Painted White	79%	k=0.38	Class-D "Combustible" Class-C Rated "Slow Burning" when mill-finished with U.S.G. Flame-Resistant Paint.	Cleaned with putty or paste type wall-paper cleaner. Can be repeatedly spray or brush painted.	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below wainscot height or exposed to impact, abrasion or tampering.
N.R.C. varies from range .80–.90 to range .90–1.00 (See Technical Data Page 19)	Painted White			Class-A "Incombustible"	Washable Repaintable	Should not be used in areas of very high humidity or where water might repeatedly impinge against the surface.
N.R.C. range .90–1.00 (See Technical Data Page 21)	Normally painted White	76%		Class-A "Incombustible"	Washable Repaintable	Use Aluminum PERFATONE Pans with galvanized fittings in areas of very high humidity or where water might repeatedly impinge against the surface.

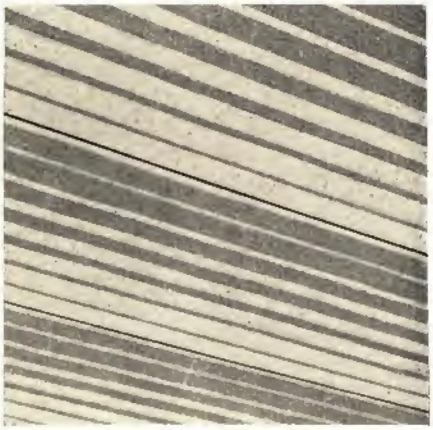


Bevel ACOUSTONE "F"
Conventional joints

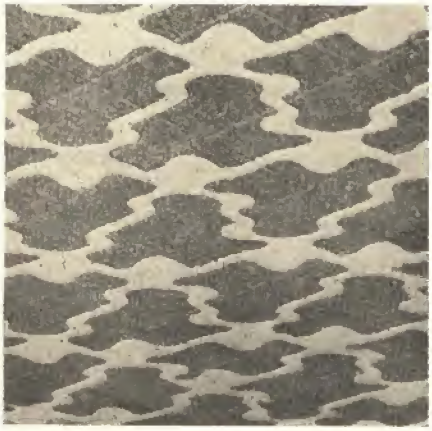
Square Edge ACOUSTONE "F"
Inconspicuous joints



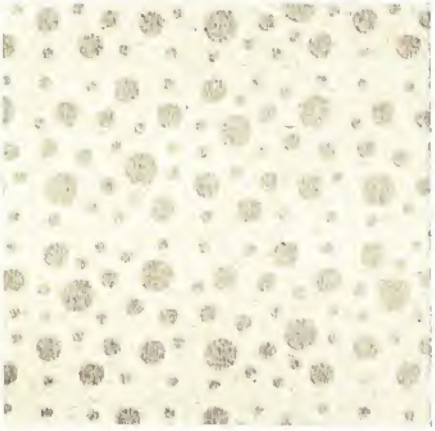
MOSAIC design No. 39
"MOTIF'D ACOUSTONE"



LINEA design No. 38
"MOTIF'D ACOUSTONE"



FANTASIA design No. 40
"MOTIF'D ACOUSTONE"



GALAXY design No. 33
"MOTIF'D ACOUSTONE"

DESCRIPTION

ACOUSTONE "F"

ACOUSTONE "F", mineral acoustical tile, is manufactured by binding mineral fibers into a lightweight, highly sound absorbent tile form. The fissured surface closely resembles that of Travertine marble. No two tiles are identical in texture; the pattern is as natural as the veining of fine marble or the grain of wood. Each tile is finish-painted at the factory. Available with accurately formed bevel or square edges.

Sizes ACOUSTONE "F" is available in ¾" thickness in 12"x12", 12"x 24" and 12"x36" sizes with square or bevel edges.

MOTIF'D* ACOUSTONE

MOTIF'D ACOUSTONE mineral acoustical tile, is produced by altering the surface of standard ACOUSTONE "F" tile by an exclusive USG process resulting in an integrally permanent decoration as selected by the designer. The finished product is mill painted. The pattern selected is accented by the varying shadows caused by directional changes in the source of light rather than by differences in applied color.

Sizes MOTIF'D ACOUSTONE (except LINEA design No. 38) is available in 12"x12" units; ¾" thick with square edges only, kerfed for splines used in adhesive or mechanical suspensions. Linea MOTIF'D ACOUSTONE is available in 12"x24" size, ¾" thick, with square edges only, kerfed only for the EZS System.

Patterns The standard patterns illustrated on this page and page 6 are available. These patterns provide the designer a wide range of beautiful and unusual decorative effects. Custom patterns can be produced to meet individual requirements.

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*T.M. Reg. U.S. Pat. Off.

FUNCTION AND UTILITY

Sound Absorption Sound absorption depends upon the mounting. Adhesive-application is designated as the No. 1 mounting and the suspended acoustical units on the Z-Spline Systems are designated as the No. 7 mounting.

Colors The face side and exposed bevels of ACOUSTONE "F" and MOTIF'D ACOUSTONE are painted at the factory with full finish coat of either white or ivory paint.

Light Reflection ACOUSTONE "F" painted with standard White finish has a light reflection of 81%.

Motif'd Acoustone acoustical tile painted white has a light reflection coefficient of 71% as tested by A.M.A. Laboratories.

Washability Factory-painted MOTIF'D ACOUSTONE and ACOUSTONE "F" may be washed with a damp sponge or cleaned with a vacuum cleaner, chemical rubber sponge, used dry, or putty or paste type wallpaper cleaner. Accidental spotting or soiling can usually be removed by this method before over-all redecoration is necessary.

Thermal Conductivity MOTIF'D ACOUSTONE and ACOUSTONE "F" have a thermal conductivity factor of k-0.35.

Paintability MOTIF'D ACOUSTONE and ACOUSTONE "F", mineral acoustical tile, may be brush or spray painted many times without loss of sound absorption at 500 cycles per second or in the Noise Reduction Coefficient. The effect of repeated coats of paint on ACOUSTONE "F" and other materials may be found in Research Paper RP-1298 "Effect of Paint on Sound Absorption of Acoustical Materials," which is obtainable from the National Bureau of Standards, U. S. Department of Commerce, Washington, D. C. Oil, casein, resin emulsion or spirit thinned paint or rubber base paints may be used with recommended painting procedures.

Resistance to Soiling and "Breathing" The smooth, painted finish of MOTIF'D ACOUSTONE and ACOUSTONE "F" resists soiling and limits objectionable air travel ("breathing") through the face of the tile.

LIMITATIONS OF USE

MOTIF'D ACOUSTONE and ACOUSTONE "F", mineral acoustical tiles, are designed for normal moisture conditions. They should not be used where they will be exposed to excessively high humidity. They should not be used below wainscot height or where they may be damaged by impact, abrasion or tampering. ACOUSTONE should not be installed until moisture resulting from plastering, concrete or terrazzo work, etc., is no longer a hazard.

TECHNICAL DATA

SOURCE: Acoustical Materials Association

UNITS	MOUNTING	THICKNESS	Coefficients at Cycles Shown						NRC Spec. Range	Wt. psf	Lt. Ref.	Fire Resistance
			125	250	500	1000	2000	4000				
MOTIF'D ACOUSTONE "Striated" Pattern #19	1	¾"	.09	.26	.69	.90	.86	.82	.65–.75	1.28	.71	Incombustible Fed. Spec. SS-A-118b
	7	¾"	.71	.64	.70	.78	.87	.93	.70–.80	1.27		
ACOUSTONE "F"	1	¾"	.15	.29	.84	.93	.78	.71	.65–.75	1.31	.81	Incombustible Fed. Spec. SS-A-118b
	7	¾"	.54	.70	.66	.76	.80	.66	.75–.85	1.29		

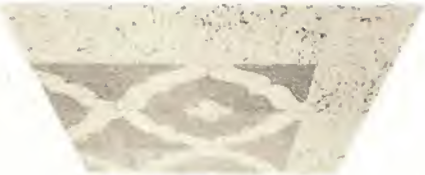
Tile tested were painted with a full finish coat of paint.

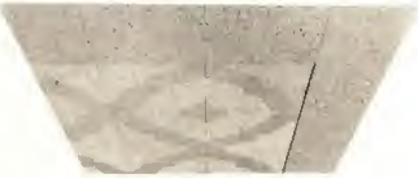
MOUNTING NO. 1—Cemented to Plasterboard—Considered Equivalent to Cementing to Plaster or Concrete Ceilings.

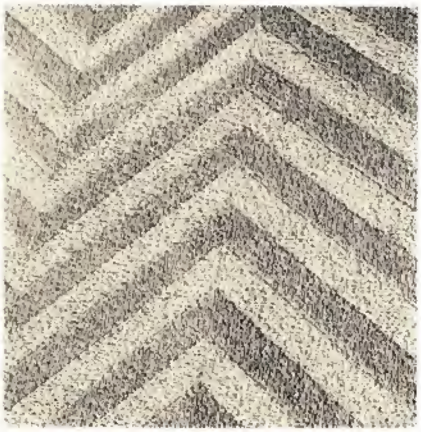
MOUNTING NO. 7—Attached to Metal Supports on Metal Suspended System.

HOW MOTIF'D* ACOUSTONE PATTERNS WORK

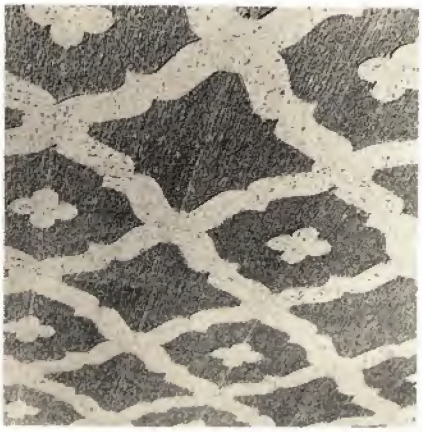
The unretouched photographs below were made of the same section of an installation of MOTIF'D ACOUSTONE tile, but under two different lighting conditions. The upper picture shows contrast or color difference obtained under normal lighting; the lower picture shows how the contrast is reversed when light was shifted 180 degrees from that used in the upper view. Such changes in degrees of contrast are usually apparent in every MOTIF'D ACOUSTONE installation. This "mobile" effect shifts, not only with light changes, but with changes in position of the observer. The pattern never becomes monotonous.



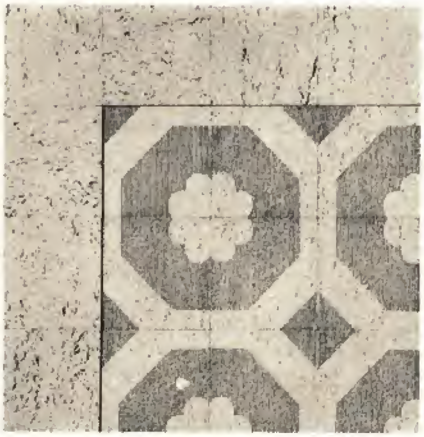




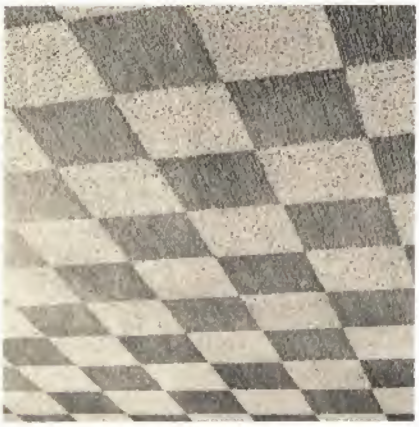
GROSGRAIN
design No. 37



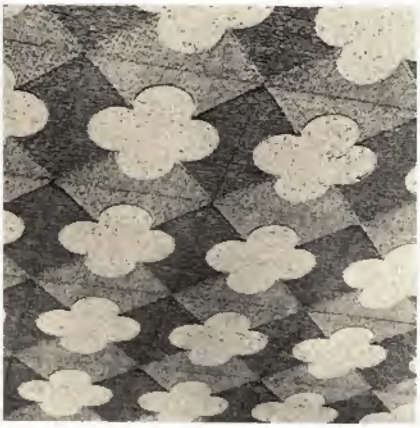
GEORGIAN
design No. 2



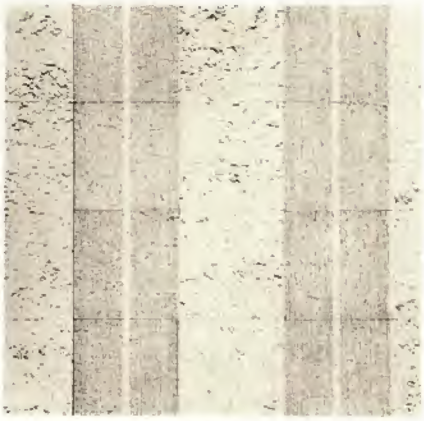
MEDALLION
design No. 10



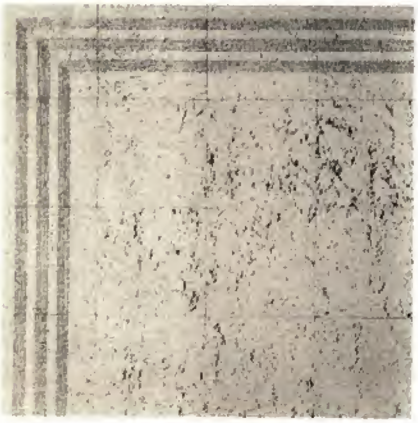
STRIATED
design No. 19



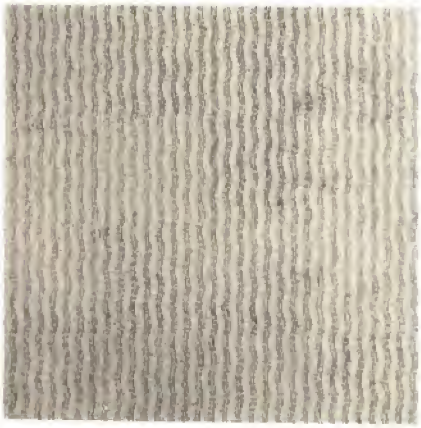
CLOVER LEAF
design No. 5



BORDER
design No. 32 B



OUTLINE
design No. 32 A



TEXTURA
design No. 36

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*T.M. Reg. U.S. Pat. Off.

INSTALLATION METHODS

1. ADHESIVE APPLICATION:
(Mounting No. 1.)

- A. To Plastered Ceilings.
- B. To USG Gypsum Boards.

2. MECHANICAL SUSPENSION:
(Mounting No. 7.)

- A. Concealed Z-Splines
  - 1. Attached to carrying channels.
  - 2. Directly Attached to Bar Joists.
  - 3. Directly Attached to Wood Furring.
- B. E-Z-S Suspension System
  - 1. Attached to carrying channels.
  - 2. Directly Attached to Bar Joists.
  - 3. Directly Attached to Wood Furring.

1. ADHESIVE APPLICATION

Application with adhesive is the most widely used method and is recommended where a suitable base exists.

BASES FOR ADHESIVE APPLICATION

A. PLASTER

1. On *new work:* a full thickness of rodded brown coat of gypsum plaster in a clean, dry, level state provides an excellent base.

On *existing work:*

a. *Old lime putty finish* that has been in place for a year or more offers a good base if the finish is well bonded to the base coat of plaster. If it is not well bonded, consider the application of Z-Splines attached to wood furring strips with No. 90 Clips. (Note mechanical suspension systems and details on page 11.)

b. A good quality paint well bonded to sound plaster and in place not less than 6 months will usually give excellent results.

B. ACOUSTONE CEMENTED TO GYPSUM BOARDS

Where an incombustible base is required, Motif'd Acoustone and Acoustone "F" can be adhesively applied to USG Z-Board, Sheetrock* Gypsum Wallboard or Rocklath* Gypsum board bases. They may be installed by the following methods:

1. USG Z-Board (Treated Core) SHEETROCK ROCKLATH	Nailed to Wood Strips
2. USG Z-Board (Treated Core)	Nailed to Nailing Channels

Adhesive Application
(Mounting No. 1)

E-Z-S Suspension System
(Mounting No. 7)

Concealed Z Spline System
(Mounting No. 7)

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*T.M. Reg. U.S. Pat. Off.

1. ADHESIVE APPLICATION—Cont'd.

LIMITATIONS OF USE

1. *Size of Units.*
Tile should not exceed 12"x12" for ceilings or 12"x24" for walls.

2. *New lime putty* finish may have free lime on the surface which can cause saponification of oils and resins in the adhesive. For this finish a combination of adhesive and nailing is recommended.

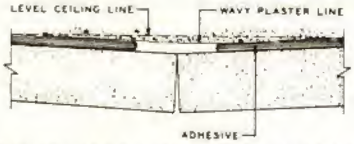
3. Hard oil (sometimes called gloss oil) when used as a size for calcimine may react with the solvents of the adhesive and therefore is an unsatisfactory base. In this case, a combination of nailing and adhesives must be used. The acoustical contractor can determine by job testing when to augment the adhesive with nailing.

4. The use of Rocklath without plaster is not recommended where job conditions, particularly moisture conditions, are unsuitable. Accordingly, Acoustone, mineral acoustical tile, shall be applied to such a base only when the installation of the base is made under the supervision of and to the satisfaction of the USG acoustical contractor.

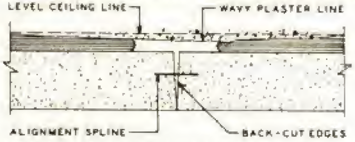
5. Since it is not always possible to determine the condition of the concrete surface, the adhesive application of any acoustical tile to a concrete slab is not recommended. (For a more economical and secure method of attaching Motif'd Acoustone or Acoustone "F" to concrete slabs, see architectural specifications, pages 22 and 23 and details page 11, "Acoustone suspended on Z-Splines directly attached to wood furring strips.")

6. The adhesive application of Motif'd Acoustone and Acoustone "F" directly to wood strips or plywood is not recommended. (For a more economical and secure method of attaching Acoustone to wood furring strips, see architectural specifications, pages 22, 23, and 24 and details page 11, "Acoustone suspended on Z-Splines directly attached to wood furring strips.")

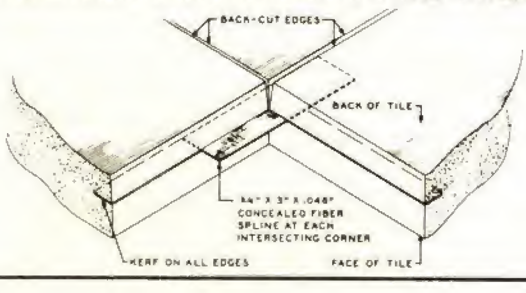
ADHESIVE APPLICATION



OLD TYPE SQUARE EDGES PRODUCE OPEN—OFFSET JOINTS OVER WAVY CEILINGS



NEW TYPE SQUARE EDGES PRODUCE TIGHTER JOINTS IN CLOSER ALIGNMENT


BACK-CUT EDGES
BACK OF TILE
¼" X 3" X .048" CONCEALED FIBER SPLINE AT EACH INTERSECTING CORNER
KERF ON ALL EDGES
FACE OF TILE

2. MECHANICAL SUSPENSION

TILE MAY BE ATTACHED

1. To carrying channels using the Concealed Z-Spline System. (Details on page 9 and architectural specifications on pages 22 and 23.)
To carrying channels using the E-Z-S System. (Details on page 10 and architectural specifications on page 23.)

2. Direct to bar joists using the Concealed Z-Spline System or the E-Z-S System. (Specifications on pages 22 and 23.)

3. Direct to wood furring using the Concealed Z-Spline System or the E-Z-S System. (Specifications on page 22 and details on page 11.)

SYSTEMS

1. Concealed Z-Splines. (See details page 9 and specifications on pages 22 and 23.)
Use ¾"x12"x12" or ¾"x12"x24" Motif'd Acoustone, Acoustone "F", mineral acoustical tile. This method offers an economical, simple, rigid construction and permits the use of flush joints where lighting conditions are not too severe.

This suspension method provides metal spline supports in kerfs along the four edges of each unit. Splines also act as a continuous seal to minimize air travel through the joints. Self leveling of the tile joints is assured since intersecting corners of four adjacent units are supported on the same member.

2. E-Z-S Suspension System. (See details page 10 and specifications on page 23.)

Use ¾" thick 12"x24" or 12"x36" Acoustone "F" with square edges, or ¾" x 12" x 24" "LINEA" MOTIF'D ACOUSTONE. This method is used where access is required to the area above the ceiling for adjusting valves, electrical equipment, controls of air conditioning equipment, or for other reasons.

Because of its ease of installation, this method is economical and provides a low cost acoustical ceiling with complete accessibility to the area above the ceiling. Any type lighting arrangement is easily adaptable to the E-Z-S Suspension System. Lighting troffers can be installed easily and economically. Full advantage can be taken of the economy of gravity-held diffusers laid directly in the Z-Spline to replace equivalent area of Acoustone. This permits maximum flexibility of lighting arrangement.

3. Z-Splines Attached To Wood Furring Strips. (See details page 11 and specifications on pages 22, 23, and 24.)

This method is particularly adaptable to those existing ceilings where the surface is in such condition that it is impossible to attach Motif'd Acoustone or Acoustone "F" tile by cementing.

This system is installed by nailing wood furring strips, maximum spacing of 4'-0" on centers for the concealed method or 5'-0" on centers for the E-Z-S system, and attaching Z-Splines to the furring strips with the No. 90 Clip. The No. 90 Clip may also be used to attach Z-Splines directly to existing wood joists or to wood furring strips nailed to exposed concrete surfaces.

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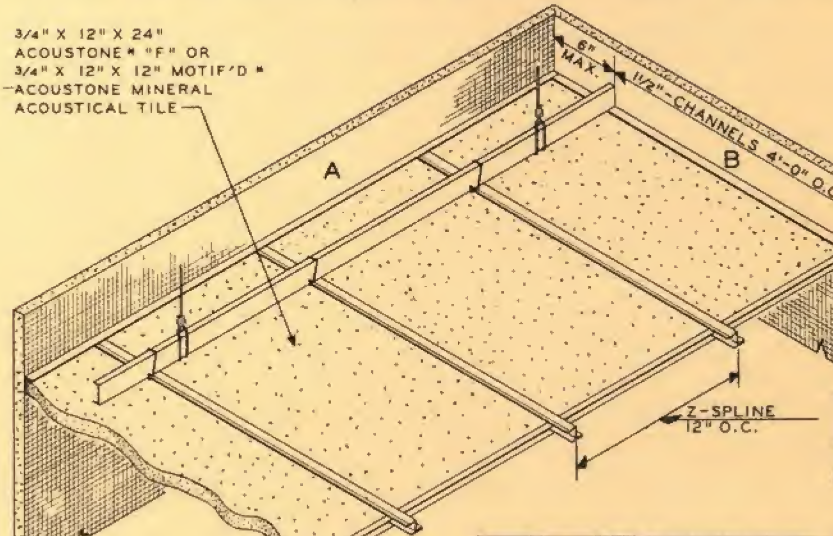
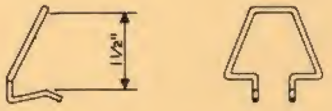
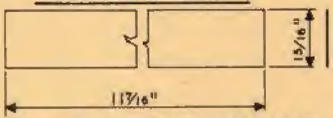
*T.M. Reg. U.S. Pat. Off.

ACOUSTONE* "F" OR MOTIF'D* ACOUSTONE, MINERAL ACOUSTICAL TILE, MECHANICAL SUSPENSION ON CONCEALED Z-SPLINE SYSTEM

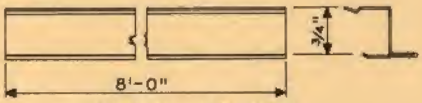

3/4" X 12" X 24" ACOUSTONE* "F" OR 3/4" X 12" X 12" MOTIF'D* ACOUSTONE MINERAL ACOUSTICAL TILE
6" MAX.
1½"-CHANNELS 4'-0" O.C.
A
B
Z-SPLINE 12" O.C.



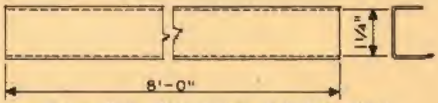
NO. 82A CLIP



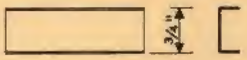
24-GA. FLAT SPLINE



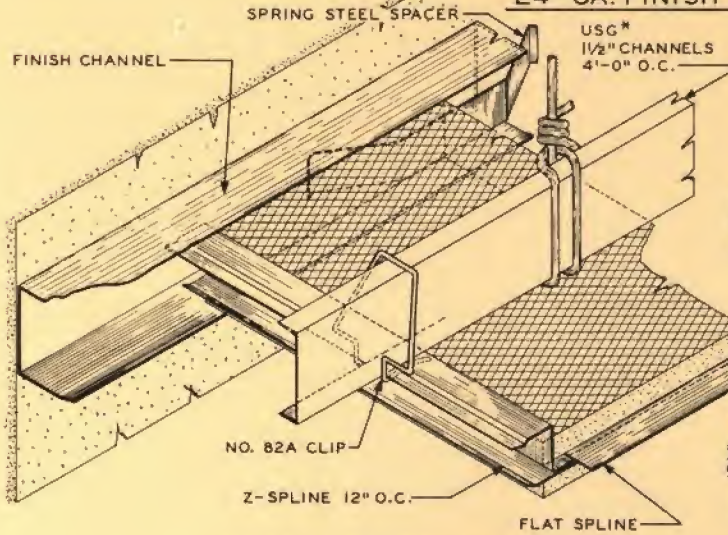
3/4" Z- SPLINE



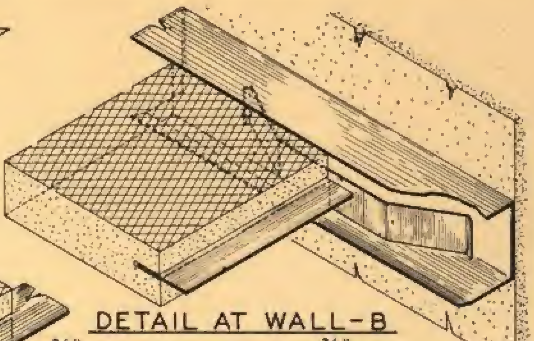
24-GA. FINISH CHANNEL



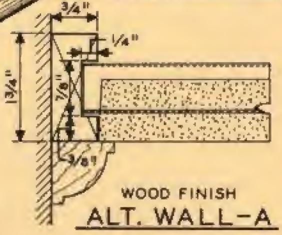
3/4" Z-SPLINE SPLICE



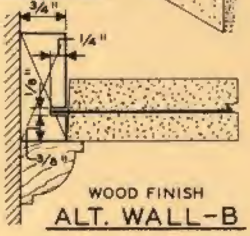
DETAIL AT WALL-A



DETAIL AT WALL-B



ALT. WALL-A



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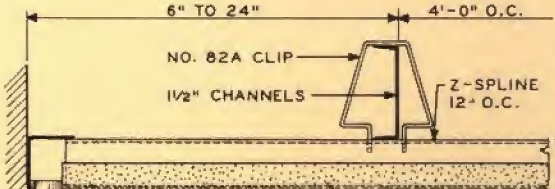
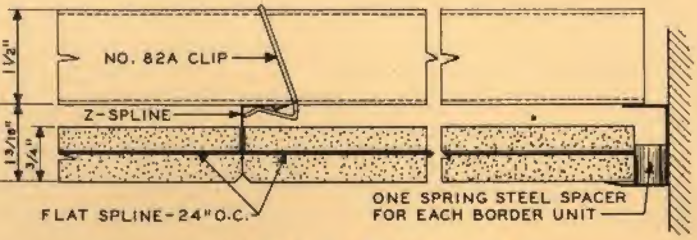


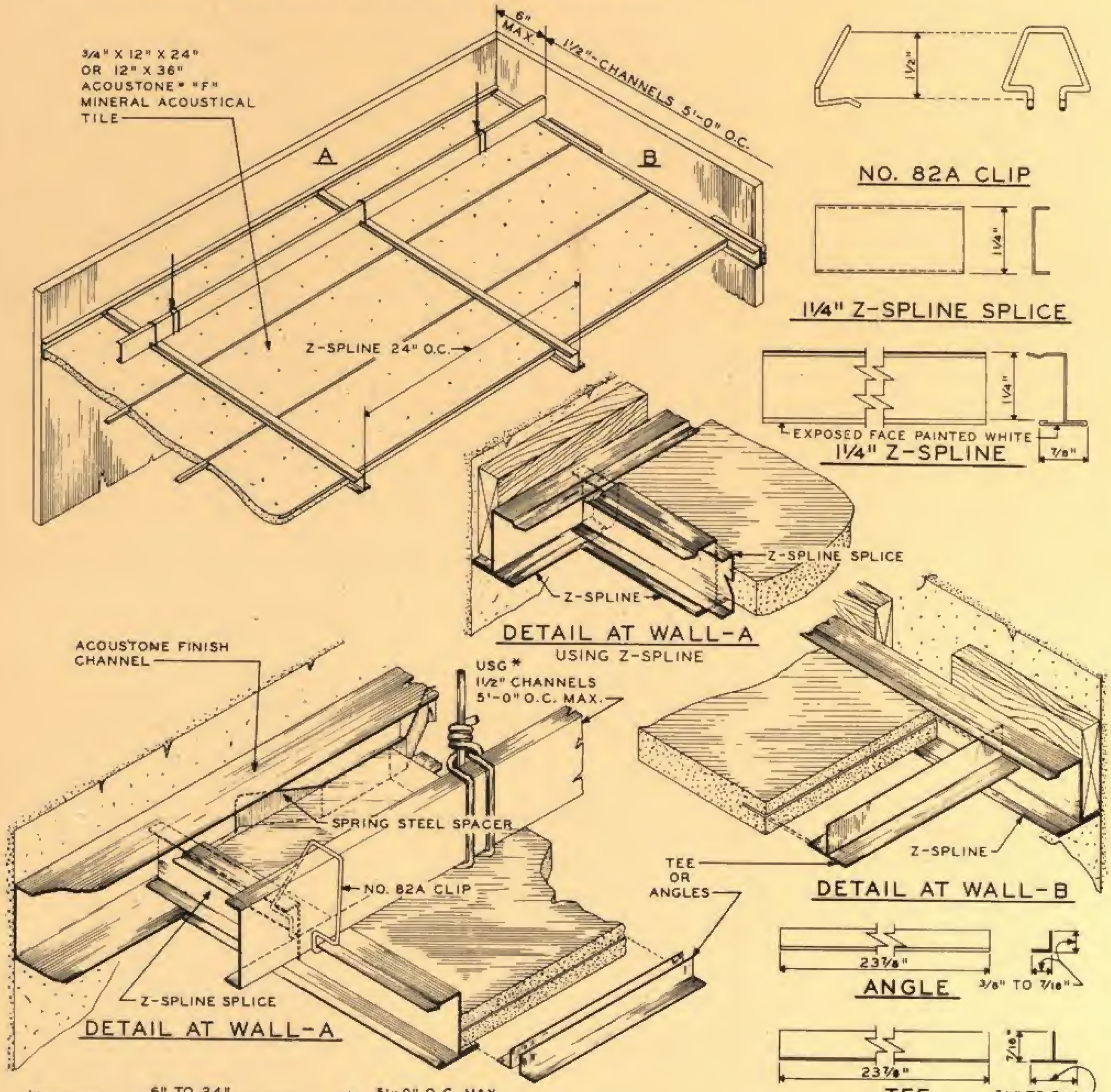
DETAIL AT WALL-A



DETAIL AT WALL-B

*T.M. Reg. U.S. Pat. Off.

ACOUSTONE* "F" OR MOTIF'D* ACOUSTONE, MINERAL ACOUSTICAL TILE, MECHANICAL SUSPENSION ON E-Z-S SYSTEM



NO. 82A CLIP

1¼" Z-SPLINE SPLICE

1¼" Z-SPLINE

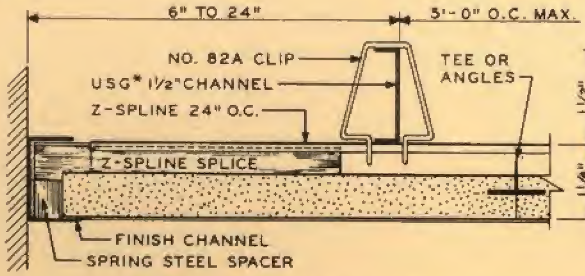
DETAIL AT WALL-A
USING Z-SPLINE

DETAIL AT WALL-A

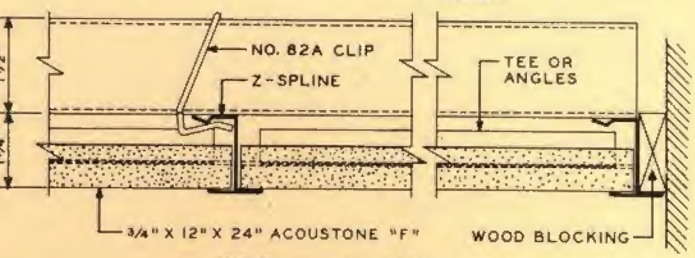
DETAIL AT WALL-B

ANGLE

TEE



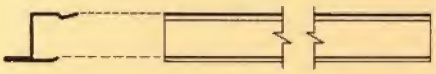
DETAIL AT WALL-A



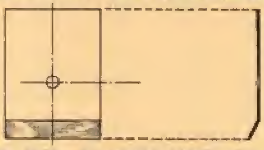
DETAIL AT WALL-B

*T. M. Reg. U.S. Pat. Off.

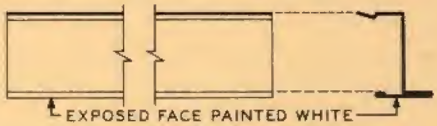
ACOUSTONE* "F" OR MOTIF'D* ACOUSTONE, MINERAL ACOUSTICAL TILE, SUSPENDED ON Z-SPLINE DIRECTLY ATTACHED TO WOOD FURRING STRIPS



3/4" Z-SPLINE

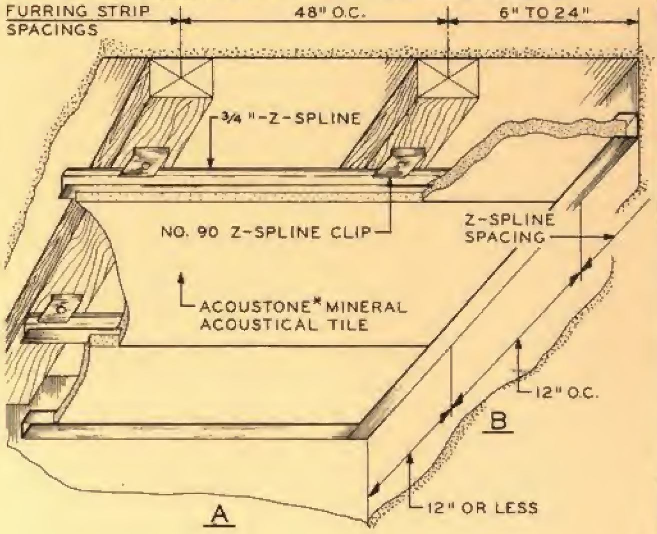


NO. 90 Z-SPLINE CLIP

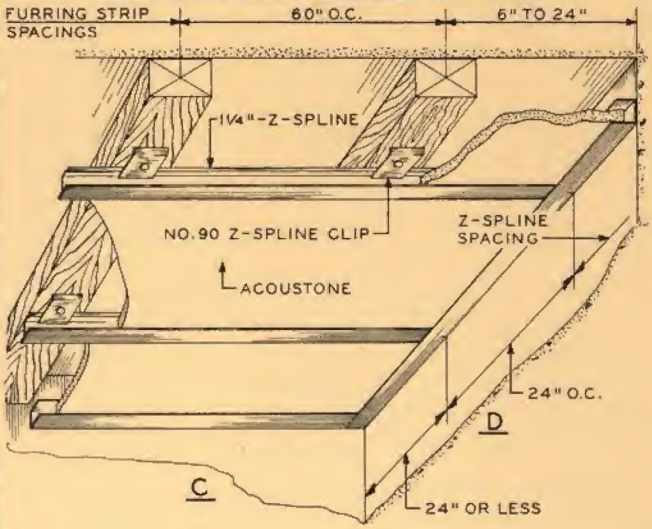


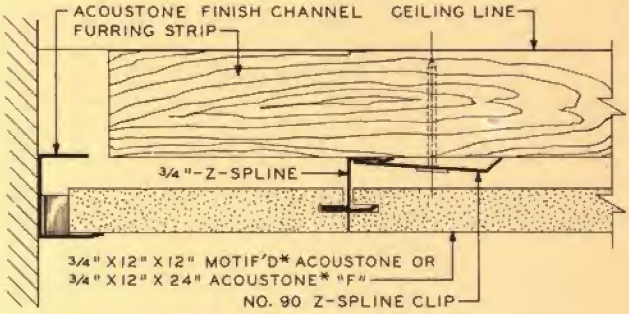
1 1/4" Z-SPLINE

CONCEALED Z-SPLINE METHOD

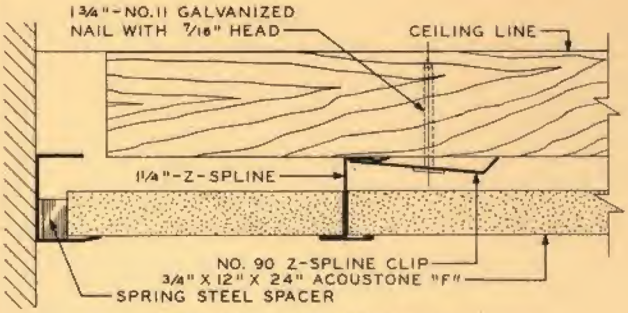


E-Z-S SUSPENSION SYSTEM

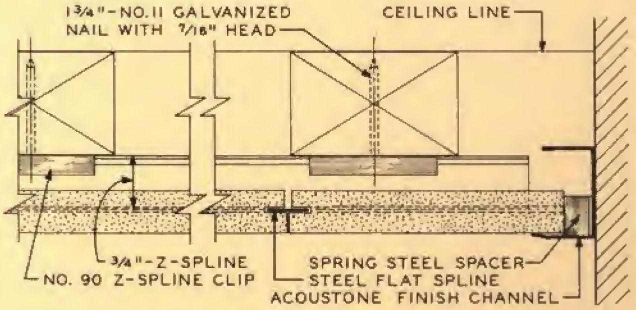




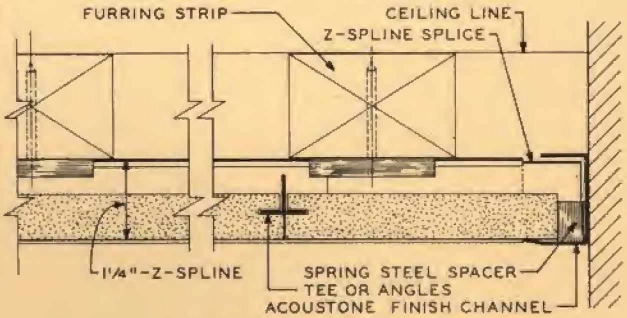
DETAIL AT WALL-A



DETAIL AT WALL-C



DETAIL AT WALL-B



DETAIL AT WALL-D

* T.M. REG. U.S. PAT. OFF.

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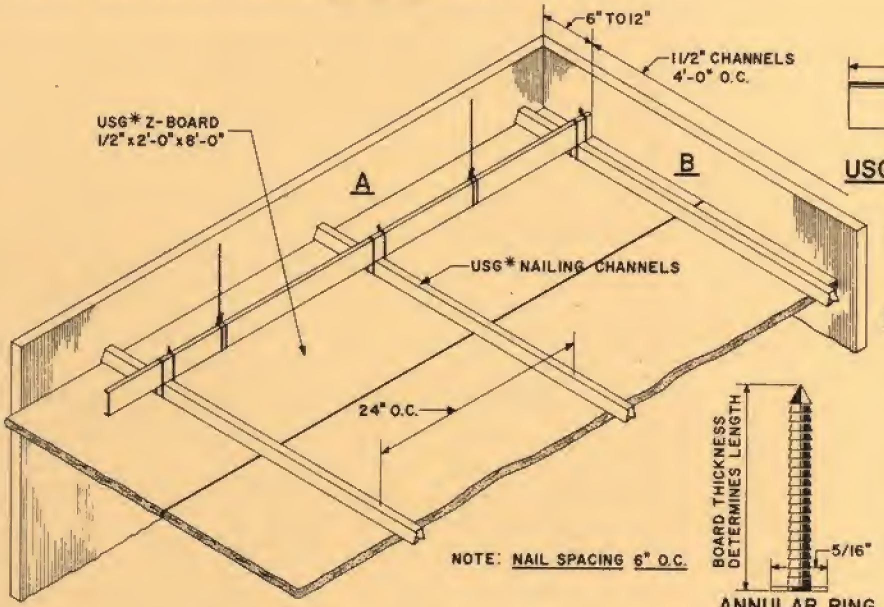
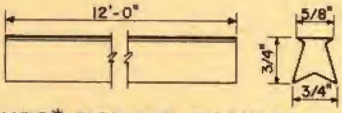
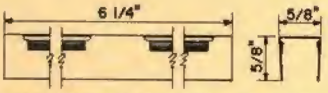
*T. M. Reg. U.S. Pat. Off.

MINERAL OR WOOD FIBER ACOUSTICAL TILE APPLICATION ON GYPSUM BOARD-NAILING CHANNEL SYSTEM

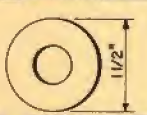

6" TO 12"
1 1/2" CHANNELS 4'-0" O.C.
USG* Z-BOARD 1/2"x2'-0"x8'-0"
A
B
USG* NAILING CHANNELS
24" O.C.
NOTE: NAIL SPACING 6" O.C.



USG* NAILING CHANNEL



NAILING CHANNEL SPLICE

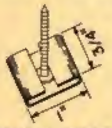


BUTT JOINT WASHER

NOTE: 6" O.C. EACH JOINT. ENGAGE ADJACENT BOARD

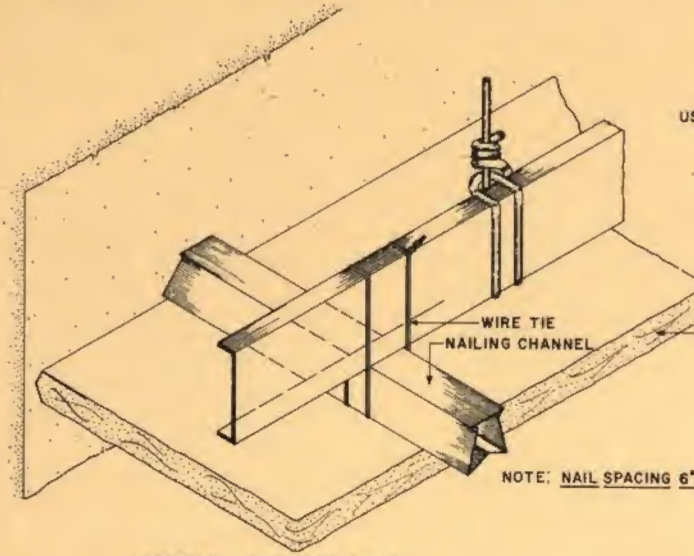
ANNULAR RING SHANK NAIL

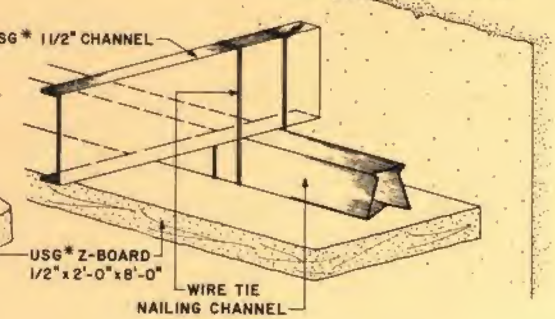
12 1/2 TO 11 GAUGE WITH 16 TO 20 RINGS PER INCH



BUTT JOINT CLIP

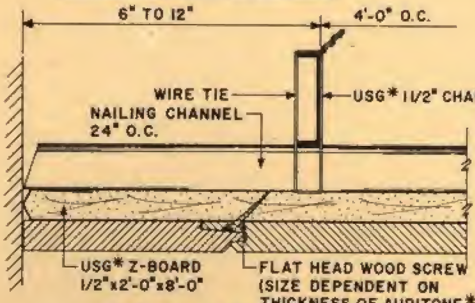
SAME SPACING AS FOR BUTT JOINT WASHER





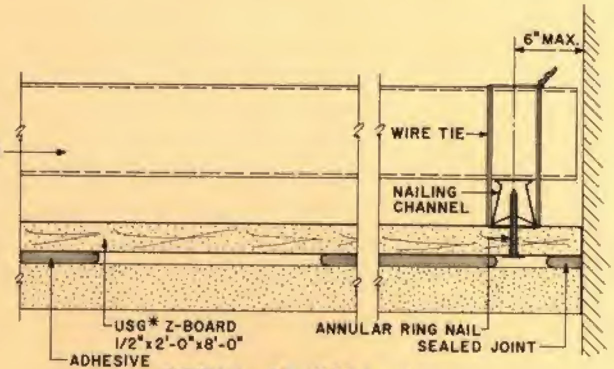
DETAIL AT WALL-B

DETAIL AT WALL-A


6" TO 12"
4'-0" O.C.
WIRE TIE
NAILING CHANNEL 24" O.C.
USG* 1 1/2" CHANNELS
USG* Z-BOARD 1/2"x2'-0"x8'-0"
FLAT HEAD WOOD SCREW (SIZE DEPENDENT ON THICKNESS OF AUDITONE*)

DETAIL AT WALL-A

SCREW APPLICATION OF FIBER TILES



DETAIL AT WALL-B

ADHESIVE APPLICATION OF MINERAL OR FIBER TILE

*T.M. Reg. U.S. Pat. Off.

AUDITONE*

WOOD FIBER ACOUSTICAL TILE

DESCRIPTION

SLOTTED AUDITONE ACOUSTICAL TILE

SLOTTED AUDITONE, wood fiber acoustical tile, is a slotted wood fiber tile designed to give maximum acoustical efficiency with an exclusive, functional appearance. Each unit is finish-painted white at the factory and is available accurately formed, with butt bevel or tongue and groove edges.

Sizes: SLOTTED AUDITONE is available in ¾″ thickness and in 12″ x 12″ or 12″ x 24″ sizes. The 12″ x 24″ tongue and groove units are center-scored to represent two 12″ x 12″ units with the slots parallel to the long edges.

PERFORATED AND RANDOM PERFORATED AUDITONE ACOUSTICAL TILE

PERFORATED AUDITONE wood fiber acoustical tile is a lightweight, low-cost, wood fiber tile designed and produced to give maximum acoustical efficiency. 529 holes 3/16″ in diameter are cleanly drilled into each square foot of tile. PERFORATED AUDITONE is accurately formed, with beveled or tongued and grooved edges.

RANDOM PERFORATED AUDITONE wood fiber acoustical tile is a lightweight, low-cost wood fiber tile, designed to minimize the appearance of individual tile units. 135 holes ¼″ in diameter and 188 holes 3/16″ in diameter are cleanly drilled into each square foot of RANDOM PERFORATED AUDITONE.

PERFORATED and RANDOM PERFORATED AUDITONE are finish-painted white at the factory.

Sizes: PERFORATED AUDITONE is available in ½″ or ¾″ thicknesses and in 12″ x 12″ or 12″ x 24″ sizes. The 12″ x 24″ tongue and groove units are center-scored and perforated to represent two 12″ x 12″ units.

RANDOM PERFORATED AUDITONE is available in ½″ or ¾″ thicknesses and in 12″ x 12″ or 12″ x 24″ sizes. The 12″ x 24″ tongue and groove units are center-scored to represent two 12″ x 12″ units.

Edge Treatment: SLOTTED, PERFORATED, and RANDOM PERFORATED AUDITONE are made with butt bevel edges for cementing to proper bases without supplementary nailing. SLOTTED, PERFORATED, and RANDOM PERFORATED AUDITONE are also made with tongue and groove edges designed to better utilize the economical methods available for stapling, screwing, or nailing wood fiber tile directly to wood joists, studs, or nailing strips. The tongue and groove edges assure level joints and smooth ceiling appearance.

FUNCTION AND UTILITY

Sound Absorption depends upon the thickness of the tile and the type of mounting. See technical data on pages 20 and 21 for sound absorption values.

Paint and Color: The face and bevels of SLOTTED, PERFORATED, and RANDOM PERFORATED AUDITONE are finish-painted white at the factory.

Maintenance: SLOTTED, PERFORATED, and RANDOM PERFORATED AUDITONE can be repeatedly brush or spray painted following recommended paint procedures with oil, resin emulsion, casein, or any of the commercial types of paint without loss of sound absorption at 500 cycles per second or in the Noise Reduction Coefficient. SLOTTED, PERFORATED, and RANDOM PERFORATED AUDITONE wood fiber acoustical tile can be cleaned with putty or paste type wallpaper cleaners.

Resistance to Soiling and Breathing: The smooth, painted finish of SLOTTED, PERFORATED, and RANDOM PERFORATED AUDITONE wood fiber acoustical tile resists soiling. SLOTTED and PERFORATED AUDITONE with tongue and groove edges minimize objectionable air travel through the joints when used on suspended nailing strips.

Thermal Conductivity: SLOTTED, PERFORATED, and RANDOM PERFORATED AUDITONE have a k factor of 0.38.

Fire Resistance: 1. SLOTTED, PERFORATED, and RANDOM PERFORATED AUDITONE, when painted with a standard USG mill finish, are rated "combustible" by Federal Specification SS-A-118b.

2. SLOTTED, PERFORATED, and RANDOM PERFORATED AUDITONE, when mill-finished with USG flame-resistant paint, are rated "slow-burning" under Federal Specification SS-A-118b.

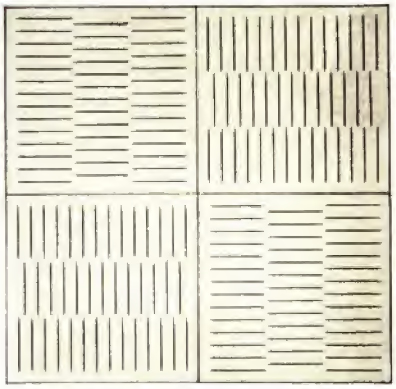
Light Reflection: PERFORATED and RANDOM PERFORATED AUDITONE wood fibre tile have a light reflection of 79% as tested by A.M.A. Laboratories.

SLOTTED AUDITONE has a light reflection of 76% as tested by A.M.A. Laboratories.

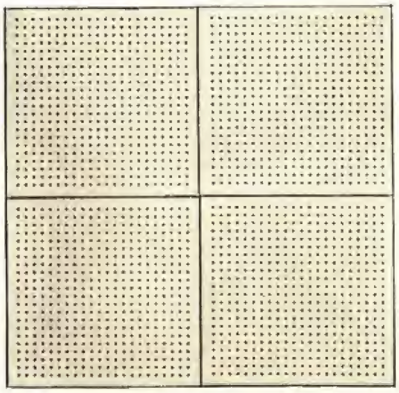
LIMITATION OF USE

SLOTTED, PERFORATED, and RANDOM PERFORATED AUDITONE should not be used below wainscot height or where tile will be subjected to severe impact, abrasion, or tampering.

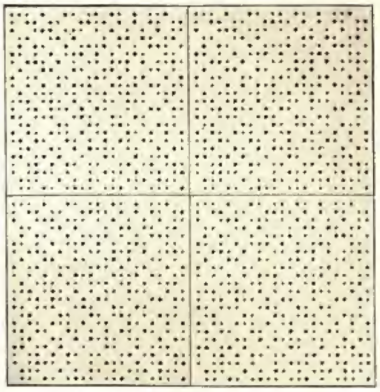
AUDITONE tile is not recommended for use where it will be exposed to steam or constant high humidity.



Slotted Auditone



Perforated Auditone



Random Perforated Auditone

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*T.M. Reg. U.S. Pat. Off.

AUDITONE*

WOOD FIBER ACOUSTICAL TILE

TECHNICAL DATA

SLOTTED AUDITONE TILE

SOUND ABSORPTION COEFFICIENTS

SOURCE: Acoustical Materials Association										SOURCE: National Bureau of Standards Letter Circular 870, August, 1947									
Thick-ness	Mount-ing	Coefficients at Cycles Shown						NRC Spec. Range	Weight psf	Thick-ness	Mount-ing	Coefficients at Cycles Shown						NRC	Weight psf
		125	250	500	1000	2000	4000					128	256	512	1024	2048	4096		
¾"	1	.18	.29	.72	.82	.84	.71	.60-.70	.87										
¾"	2	.20	.62	.50	.67	.82	.73	.65-.75	.93	¾"	1	.08	.30	.66	.80	.86	.75	.65	0.79

Tile tested were painted with a full finish coat of paint. **MOUNTING NO. 1**—Cemented to plasterboard—Considered Equivalent to Cementing to Plaster or Concrete Ceilings. **MOUNTING NO. 2**—Nailed to wood strips.

DESIGN DATA

UNITS	EDGE	SLOTTED	THICKNESS	CENTER-SCORED
12" x 12"				
Field Tile	Butt	Yes	¾"	No
Border Tile	Butt	No	¾"	No
12" x 24"				
Field Tile	T & G	Yes	¾"	Yes
Border Tile	T & G	No	¾"	Yes

LIGHT REFLECTION:

SLOTTED AUDITONE—WHITE 76%
Tests by Official A.M.A. Laboratories.

HEAT CONDUCTIVITY: k=0.38

FIRE RESISTANCE:

1. "Combustible" when painted with standard USG Mill-Finish.
2. Meets Federal Specifications SS-A-118b "Slow Burning" classification when mill painted with USG Flame-Resistant Paint

PERFORATED AUDITONE TILE

SOUND ABSORPTION COEFFICIENTS

SOURCE: Acoustical Materials Association

THICKNESS	MOUNTING	Coefficients at Cycles Shown						NRC Spec. Range	WEIGHT psf
		125	250	500	1000	2000	4000		
½"	1	.14	.27	.61	.68	.66	.68	.55-.65	.74
½"	2	.15	.69	.48	.59	.70	.68	.60-.70	.74
¾"	1	.13	.35	.71	.82	.77	.64	.65-.75	.94
¾"	2	.25	.65	.57	.79	.78	.63	.70-.80	.91
¾"	7	.28	.38	.57	.77	.87	.72	.65-.75	.93

DESIGN DATA

UNITS	EDGE	PERFORATED	THICKNESS	CENTER-SCORED
12" x 12"				
Field Tile	Butt	Yes	½", ¾"	No
Border Tile	Butt	No	½", ¾"	No
12" x 24"				
Field Tile	T & G	Yes	½", ¾"	Yes
Border Tile	T & G	No	½", ¾"	Yes

Tile tested were painted with a full finish coat of paint.

Mounting No. 1—Cemented to plasterboard—Consider equivalent to cementing to plaster or concrete ceiling.

Mounting No. 2—Nailed to wood strips.

Mounting No. 7—Attached to metal supports on metal suspended system.

LIGHT REFLECTION—

PERFORATED AUDITONE—White, 79%
Tests by Official A.M.A. Laboratory.

HEAT CONDUCTIVITY: k=0.38

FIRE RESISTANCE:

1. "Combustible" when painted with standard USG Mill-Finish.
2. Meets Federal Specification SS-A-118b "Slow Burning" classification when Mill-painted with USG Flame-Resistant Paint.

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*T.M. Reg. U.S. Pat. Off.

RANDOM PERFORATED AUDITONE TILE

SOUND ABSORPTION COEFFICIENTS

SOURCE: Acoustical Materials Association

THICKNESS	MOUNTING	Coefficients at Cycles Shown						NRC Spec. Range	WEIGHT psf
		125	250	500	1000	2000	4000		
½"	1	.11	.26	.52	.57	.60	.66	.50-.60	.73
½"	2	.18	.60	.40	.47	.63	.77	.55-.65	.74
¾"	1	.22	.34	.71	.74	.77	.72	.60-.70	.92
¾"	2	.29	.67	.54	.68	.75	.65	.65-.75	.95

DESIGN DATA

UNITS	EDGE	PERFORATED	THICKNESS	CENTER-SCORED
12" x 12"				
Field Tile	Butt	Yes	½", ¾"	No
Border Tile	Butt	No	½", ¾"	No
12" x 24"				
Field Tile	T & G	Yes	½", ¾"	Yes
Border Tile	T & G	No	½", ¾"	Yes

Tile tested were painted with a full finish coat of paint.

Mounting No. 1—Cemented to plasterboard—Consider equivalent to cementing to plaster or concrete ceiling.

Mounting No. 2—Nailed to wood strips.

LIGHT REFLECTION—
RANDOM PERFORATED AUDITONE—White 79%

Tests by Official A.M.A. Laboratory.

HEAT CONDUCTIVITY: k=0.38

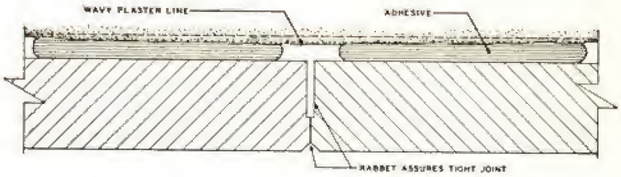
FIRE RESISTANCE:

1. "Combustible" when painted with standard USG Mill-Finish.
2. Meets Federal Specification SS-A-118b "Slow Burning" classification when mill painted with USG Flame Resistant Paint.

INSTALLATION METHODS

AUDITONE is installed by approved USG Acoustical Contractors using one of the following methods:

1. Adhesive application of 12" x 12" or 12" x 24" AUDITONE to an existing ceiling or to a suspended gypsum board base.
2. Stapling, nailing or screwing 12" x 24" tongue and groove units to wood strips, studs or joists.
3. Screw application of 12" x 24" tongue and groove units to USG Z-Board or SHEETROCK wallboard.
4. Mechanical suspension of ¾" x 12" x 24" tongue and groove units.

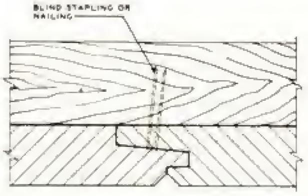


Adhesive Application
12" x 12" AUDITONE

LIMITATION OF USE

SLOTTED, PERFORATED, and RANDOM PERFORATED AUDITONE should not be used below wainscot height or where tile will be subjected to severe impact, abrasion, or tampering.

AUDITONE tile is not recommended for use where it will be exposed to steam or constant high humidity.



Stapling or Nailing Application
TO WOOD STRIPS USING 12" x 24"
T & G AUDITONE

DESCRIPTION

CORRUTONE Acoustical Panels are perforated, corrugated units accurately formed from heavily galvanized, bonderized steel, painted two coats of baked-on enamel. Light weight, highly sound absorbent mineral fiber pads are placed on the upper surface of each panel. These pads are incombustible, moisture and vermin resistant. The assembly has a pleasing appearance, can be economically installed, has a high sound absorption, and can be easily maintained.

Sizes—The CORRUTONE steel units are available in 24″ x 24″ or 24″ x 48″ sizes. Mineral fiber pads may be obtained in rolls or pads of 24″ x 24″ and 24″ x 48″ sizes.

FUNCTION AND UTILITY

Appearance—The CORRUTONE Acoustical Panels, suspended on the E-Z-S system, produce a truly refined surface of strong lines and simple beauty. The CORRUTONE units and the finish coated Z-Spline members create a very pleasant panel effect.

Economy—Because of the simplicity of the CORRUTONE system, the entire ceiling can be quickly and economically installed.

Inasmuch as the CORRUTONE Panels can be easily washed or repainted, annual maintenance costs are low.

Because of simplicity of design the CORRUTONE ceiling is almost 100% salvageable. It can be removed and installed in another area.

Sound Absorption—CORRUTONE has an unusually flat absorption curve and an exceptionally high sound absorption in the low frequencies, where most perforated tiles show poor absorption. (See Sound Absorption Data, Page 17.)

Maintenance—The smooth painted finish of the CORRUTONE Acoustical Panels resists soiling. If the panels do become dirty they can be easily washed or repainted by maintenance men.

Washability—Panels may be washed on the ceiling or can be removed, washed and replaced by maintenance men. An entire ceiling can be removed, "laundered" and replaced over-night without disturbing anyone within the area during working hours. Panels can be spot cleaned with a damp sponge.

Paintability—CORRUTONE can be repeatedly brush or spray painted following recommended paint procedures. If necessary, the panels can be removed, painted and replaced when dry.

Versatility—CORRUTONE Acoustical Panels afford easy accessibility to electrical wiring, plumbing, air conditioning and other services above the ceiling. The system accommodates almost any lighting arrangement, whether fluorescent or incandescent fixtures are used.

Fire Resistant—The entire CORRUTONE assembly, consisting of metal panels and mineral wool sound absorbing pads is rated "incombustible" under Federal Specifications SS-A-118b test method.

Thermal Conductivity—CORRUTONE Acoustical pad has a thermal conductivity factor of k-0.26.

LIMITATIONS OF USE

In areas of very high humidity, or where water might impinge against the acoustical surface, consult your USG representative.

Where CORRUTONE is used on large, high ceiling areas such as gymnasiums, two sheet metal screws should be used at each panel joint in addition to the use of hold down clips as recommended (see page 23 for specification).

SPECIAL USE

Ceilings are generally considered the most suitable surfaces for acoustical treatment. There are numerous cases, however, where supplemental side wall treatment is required and other cases where side wall treatment alone is more effective than ceiling treatment would be.

FUNCTION AND UTILITY

Because of the simplicity of the system and because the metal Corrutone panels are made of heavy galvanized, bonderized steel, painted with two coats of baked-on enamel that exactly matches the enamel finish of the Z-Splines and finish channel, the Corrutone units can be economically installed and easily maintained on side walls. The incombustible, highly sound absorbent mineral fiber pad provides high sound absorption at both the high and low frequencies.

TECHNICAL DATA

SOUND ABSORPTION COEFFICIENTS

SOURCE: Acoustical Materials Association

Thickness	Mounting	Coefficients at Cycles Shown						NRC Spec. Range	Weight
		125	250	500	1,000	2,000	4,000		
2″	7	.83	.85	.99	.99	.91	.54	.85-.95	0.7 Pad*

MOUNTING NO. 7—Attached to Metal Supports on Metal Suspended System.

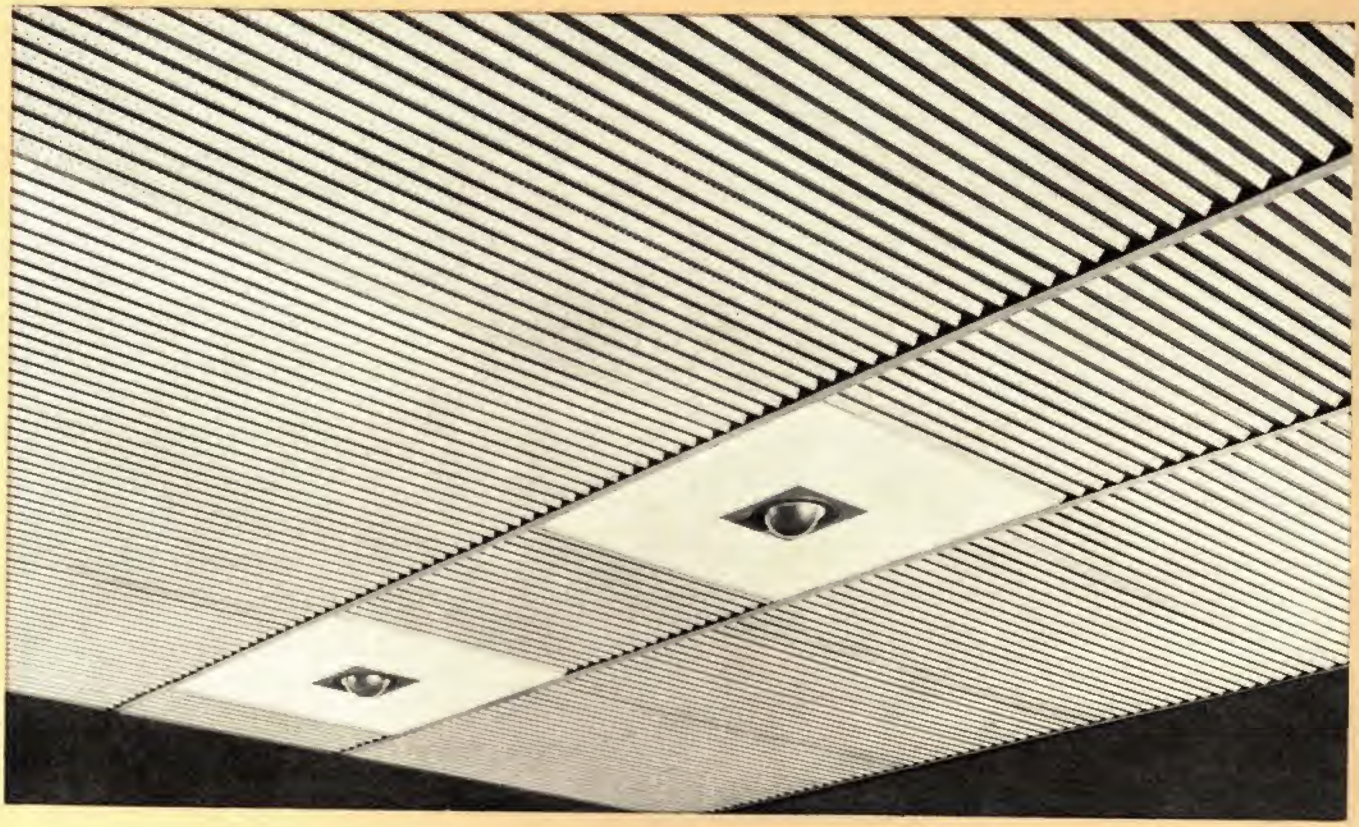
HEAT CONDUCTIVITY—k = 0.26

FIRE RESISTANCE—"Incombustible"

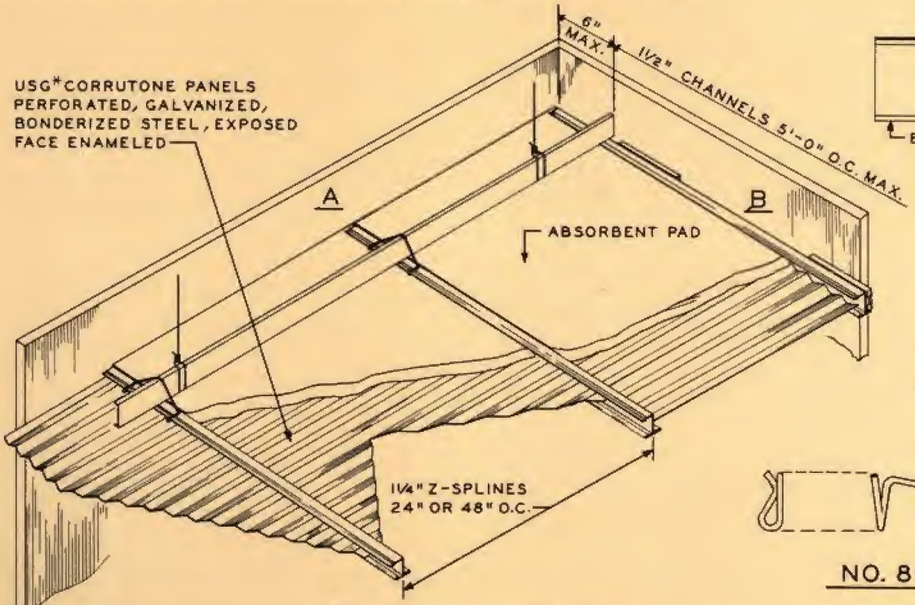
*2″ Mineral fiber pads

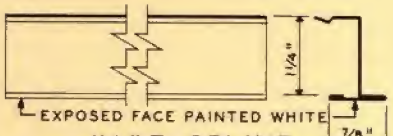
INSTALLATION

The CORRUTONE Panels are suspended on the E-Z-S system. This system can be attached to carrying channels, or directly to bar joist, or wood furring strips. CORRUTONE metal panels are supported on the bottom flanges of the Z-Spline, and a mineral fiber pad is placed on the upper surface of each panel. Panel ends are lapped. (See page 23 for specifications, page 18 for details.)

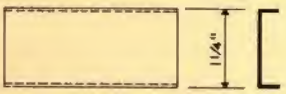


CORRUTONE ACOUSTICAL PANEL
MECHANICAL SUSPENSION ON E-Z-S SYSTEM

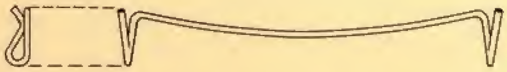

6" MAX.
1½" CHANNELS 5'-0" O.C. MAX.
USG* CORRUTONE PANELS PERFORATED, GALVANIZED, BONDERIZED STEEL, EXPOSED FACE ENAMELED
A
B
ABSORBENT PAD
1¼" Z-SPLINES 24" OR 48" O.C.



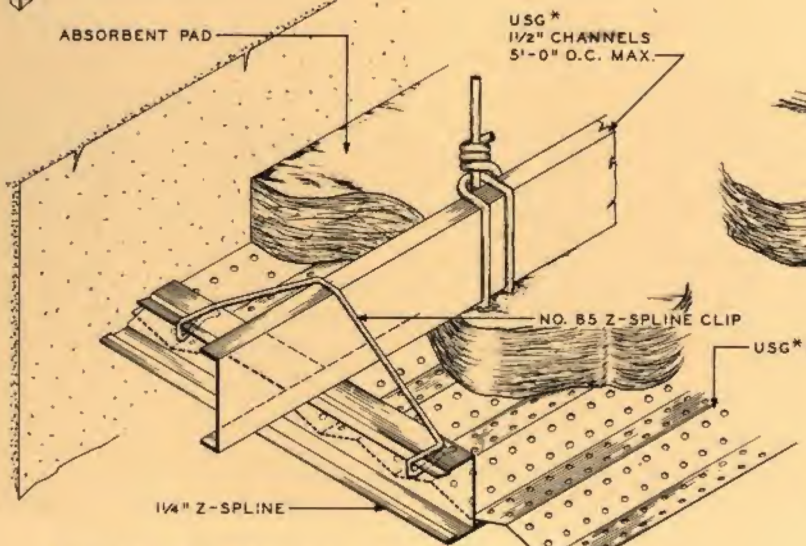
1¼" Z-SPLINE



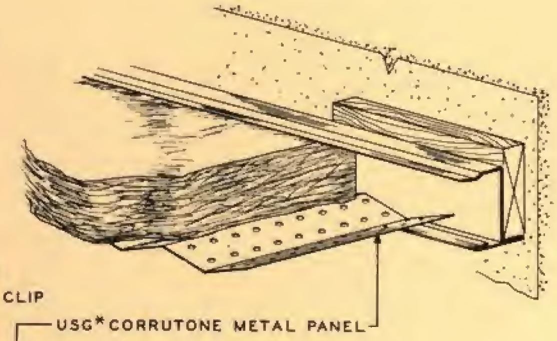
1¼" Z-SPLINE SPLICE



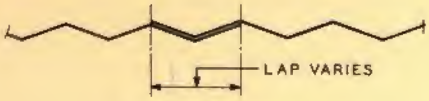
NO. 85 Z-SPLINE CLIP



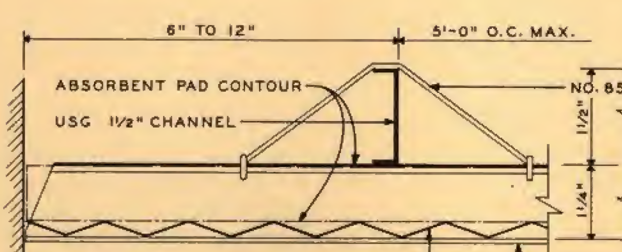
DETAIL AT WALL-A



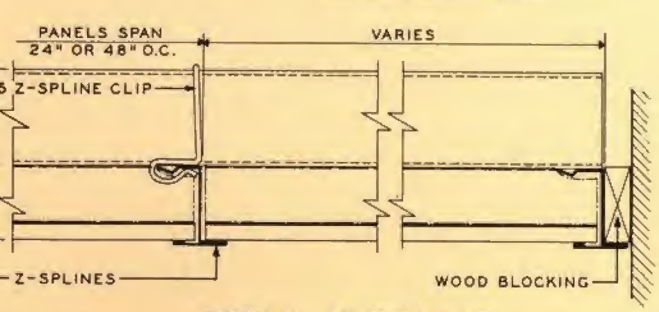
DETAIL AT WALL-B



LAP DETAIL

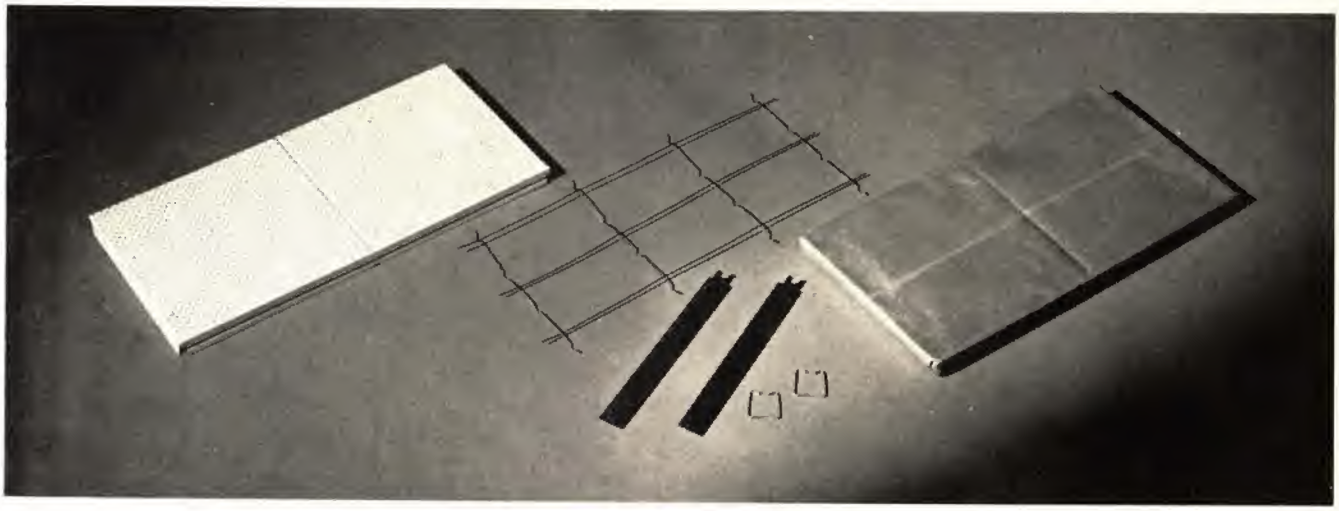


DETAIL AT WALL-A



DETAIL AT WALL-B

PERFATONE*
ACOUSTICAL TILE UNITS



12" x 24" UNITS, CENTER-SCORED TO SIMULATE 12" x 12" UNITS; WIRE GRID SPACER TO SUPPORT MINERAL WOOL PAD; TEE RUNNERS; P-150 CLIPS

DESCRIPTION

PERFATONE acoustical units are perforated metal pans (1105 holes per square foot), 12" x 12" or 12" x 24", 12" x 36" in size, center-scored to simulate 12" x 12" units. Five types of PERFATONE pans are produced.

1. 26 ga. electro-zinc coated steel units with baked-on enamel on the face and back sides.
2. 26 ga. cold rolled steel units with baked-on enamel on the face and back sides.
3. 26 ga. electro-zinc coated steel units with baked-on enamel on the face side only.
4. 3S ½H .025 aluminum units with baked-on enamel on the face and back sides.
5. 3S ½H .025 aluminum units with the bare mill finish.

Enclosed within the metal units are mineral fiber sound-absorbent pads, supported on formed wire mesh which provides an air space between the pad and the metal facing.

The above PERFATONE units are also available unperforated for use as border tile or decorative effects.

FUNCTION AND UTILITY

Sound Absorption PERFATONE has a Noise Reduction Coefficient Spec. Range .90 to 1.00 and a Sound Absorption Coefficient of .89 at 500 cycles per second. (See Technical Data below).

Colors PERFATONE accoustical units are normally painted WHITE, but may be obtained in GRAY-GREEN or BLUE-GRAY colors.

Paintability and Maintenance PERFATONE can be repeatedly brush or spray painted following recommended paint procedures or may be washed with a damp sponge.

Fire Resistance PERFATONE metal units and the mineral wool pads are rated "Incombustible" when tested in accordance with Federal Specifications SS-A-118b.

LIMITATIONS OF USE

In areas of high humidity or where moisture might impinge against the acoustical surface, Aluminum PERFATONE Pans with galvanized fittings, or a different architectural design should be considered.

TECHNICAL DATA

SOURCE: Acoustical Materials Association

MOUNTING	THICKNESS	Coefficients at Cycles Shown						NRC Spec. Range	WEIGHT psf
		125	250	500	1000	2000	4000		
3	2½"	.32	.71	.99	.99	.82	.49	.90-1.00	1.11 pad

Pads were tested in perforated enameled metal pans with pad supports.

Mounting No. 3—Attached to metal supports applied to 1" x 3" wood furring.

LIGHT REFLECTION—White 76%

FIRE RESISTANCE—"INCOMBUSTIBLE" as Tested by Official A.M.A. Laboratory.

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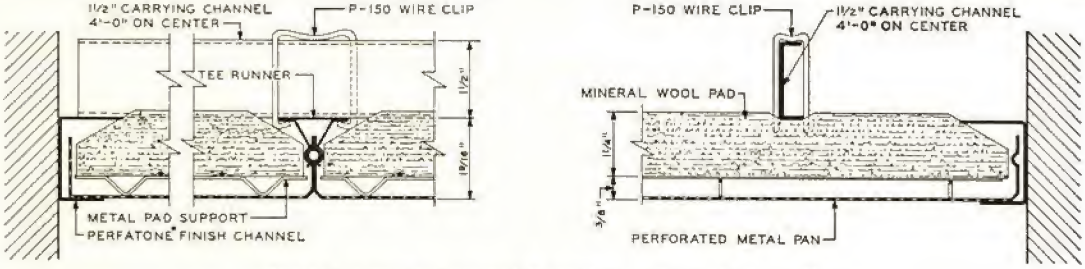
*T.M. Reg. U.S. Pat. Off.

PERFATONE INSTALLATION



Detail showing metal finishing channel at wall

PERFORATED ASBESTOS BOARD

DESCRIPTION

Perforated Asbestos Board—An "incombustible" acoustical construction consisting of perforated 3⁄16" asbestos board and mineral fiber pads or blankets. The perforated facing is attached with wood screws or by other means to furring strips. This construction is commonly used in space subject to high humidity, impact or abrasion, and in radio studios.

TECHNICAL DATA

SOURCE: Acoustical Materials Association

MOUNTING	THICKNESS	Coefficients at Cycles Shown						NRC Spec. Range	psf
		125	250	500	1000	2000	4000		
5	1 7⁄16"	.30	.63	.97	.91	.63	.33	.75-.85	1.21 pad

Pads were tested on Perforated Asbestos Boards.

Perforated Asbestos Board is not painted.

FIRE RESISTANCE—"INCOMBUSTIBLE" as Tested by Official A.M.A. Laboratory.

OTHER USG SOUND CONTROL MATERIALS

USG Sound Insulation—For insulating rooms against extraneous noises. This special USG construction employs patented resilient floor chairs and wall and ceiling resilient clips to support room surfaces, thus furnishing an effective barrier against sound transmission.

DESIGN DATA

	Thickness	**Size**	**Edge**	**Installation, Kerfing and Back-cut**
MOTIF'D ACOUSTONE TILE ***Mineral Acoustical Tile***	¾"	12"x12"	Square Only	INSTALLATION: *Adhesive Method.* All units kerfed and back-cut for STANDARD KERF
	¾"	12"x12"	Square Only	INSTALLATION: *Mechanical Suspension—Concealed Z-Spline Method.* All units kerfed and back-cut for STANDARD KERF
	¾"	12"x24"	Square Only	INSTALLATION: *Mechanical Suspension—E-Z-S Suspension System.* Linea pattern only—All units kerfed and back-cut on 24" edges for Angles or T-Splines.
ACOUSTONE "F" ***Mineral Acoustical Tile***	¾"	12"x12"	Square or Bevel	INSTALLATION: *Adhesive Method.* All units kerfed and back-cut for STANDARD KERF
	¾"	12"x24" 12"x36"	Square Only	INSTALLATION: *Mechanical Suspension—E-Z-S Suspension System.* All units kerfed and back-cut on 24" or 36" edges for Angles or T-Splines.
	¾"	12"x24"	Square or Bevel	INSTALLATION: *Mechanical Suspension—Concealed Z-Spline Method.* All units kerfed and back-cut for STANDARD KERF
CORRUTONE ***Perforated, Corrugated Metal Acoustical Panels***	1$\frac{5}{16}$" or 2$\frac{5}{16}$"	24"x24" 24"x48"	Corrugated	INSTALLATION: *Mechanical Suspension—E-Z-S System.* *Side Wall Application—*
SLOTTED AUDITONE ***Wood Fiber Acoustical Tile***	¾"	12"x12"	Bevel	*ADHESIVE METHOD.*
	¾"	12"x24"	Tongue and Groove	1. Nailing or Stapling to Wood Framing. 2. Screw application to Wood Framing or USG Z-Board. 3. Mechanical Suspension.
PERFORATED AUDITONE ***Wood Fiber Acoustical Tile*** **and** **RANDOM PERFORATED AUDITONE** ***Wood Fiber Acoustical Tile***	½" or ¾"	12"x12"	Bevel	*ADHESIVE METHOD.*
	½"	12"x24"	Tongue and Groove	
	½" or ¾"	12"x24"	Tongue and Groove	1. Nailing or Stapling to Wood Framing. 2. Screw application to Wood Framing or USG Z-Board. 3. Mechanical Suspension.

1. SCOPE

(Architect will list all areas to receive acoustical treatment.)

2. GENERAL PROVISIONS

2a. Bases to receive acoustical units and the units themselves shall not be installed unless satisfactory closures for windows and other openings are in place and roofs are tight. Temperatures in working areas shall be well above freezing.

2b. Bases to receive acoustical units adhesively applied shall be sound, dry and free of moisture.

2c. The area or room in which acoustical units are to be installed shall not be damp; i.e. plaster, terrazzo floor, etc., shall be previously installed and dry.

2d. Acoustical units shall not be adhesively installed to roof slabs during extremely hot weather.

3. MATERIALS

3a. Acoustical Tile Shall Be:

3a-1 MOTIF'D ACOUSTONE TILE (¾" thickness 12" x 12" as manufactured by the U. S. Gypsum Company. MOTIF'D ACOUSTONE design shall be (No. 2, 5, 10, 19, 32, 33, 36, 37, 39 or 40) and shall be mill painted white or ivory, or Design No. 38 (¾" x12"x24").

3a-2 ACOUSTONE "F" (¾" thickness x 12" x 12" or 12" x 24" or 12" x 36" square or bevel edge) as manufactured by the U. S. Gypsum Company. Tile shall be painted white or ivory.

3a-3 CORRUTONE ($1\frac{5}{16}$" or $2\frac{5}{16}$" thickness 24" x 24" or 24" x 48") as manufactured by the U. S. Gypsum Company. CORRUTONE Acoustical Panels shall be metal units, perforated, corrugated, and mill painted white. Sound absorbent pads shall be mineral fiber pads 24" x 24" or 24" x 48.

3a-4 SLOTTED AUDITONE TILES (¾" thickness x 12" x 12" or 12" x 24") as manufactured by the U. S. Gypsum Company. (Specify Flame Resistant finish or standard mill finish.)

3a-5 PERFORATED AUDITONE (½" or ¾" x 12" x 12" bevel edge or 12" x 24" tongue and groove edge) manufactured by the U. S. Gypsum Company. (Specify Flame Resistant finish or standard mill finish.)

3a-6 RANDOM PERFORATED AUDITONE (½" or ¾" x 12" x 12" bevel edge or 12" x 24" tongue and groove edge) manufactured by the U. S. Gypsum Company. (Specify Flame Resistant finish or standard mill finish.)

3a-7 PERFATONE metal acoustical units as manufactured for the U. S. Gypsum Company. Metal units shall be 12" x 12" or 12" x 24", 12" x 36" center-scored to simulate 12" x 12" units. (Specify type of PERFATONE.

Sound absorbent mineral fiber pads shall be 12" x 12", or 12" x 24".

3a-8 PERFORATED ASBESTOS BOARD ($\frac{3}{16}$" thickness x 12" x 12", 12" x 24", 24" x 24", 24" x 48") manufactured for the U. S. Gypsum Company, natural finish.

Sound absorbent mineral fiber pads shall be 12" x 24".

3b. Suspended Gypsum Board Base Shall Be:

3b-1 USG Z-Board (½" x 2'-0" x 8'-0") manufactured by the U. S. Gypsum Company.

4. ACCESSORIES FOR METHOD OF INSTALLATION AND INSTALLATION SHALL BE:

4a. ADHESIVE METHOD (12" x 12" MOTIF'D ACOUSTONE, 12" x 12" ACOUSTONE "F" or 12" x 12" AUDITONE ONLY)

4a-1 Accessories Shall Be:

4a-1a The adhesive shall be of a type manufactured expressly for the purpose shall not be water soluble nor contain ingredients that react chemically with paint, nor contain a solvent that has a stronger solvent action on an oil paint than naphtha; it shall contain no alcohol.

4a-1b Flat fiber splines. (Used with square edge MOTIF'D ACOUSTONE and ACOUSTONE "F", mineral acoustical tile, ONLY) shall be ¾" x 3" x .048".

4a-2 Installation Shall Be:

The acoustical units shall be primed with adhesive prior to the application of the 4 spots of adhesive placed near the corners of the tile. The adhesive shall be approximately 2½" in diameter after the tile has been pressed into position on the ceiling. Acoustical units shall be placed so that the face surface of the acoustical ceiling is aligned and level.

Place ¾" x 3" x .048" Fiber Splines in the kerfs at the corners of the acoustical units.

4b. ADHESIVE METHOD (½" x 12" x 24" Tongue and Groove AUDITONE ONLY).

4b-1 Accessories Shall Be:

4b-1a Same as 4a-1a.

4b-2 Installation Shall Be:

The acoustical units shall be primed with adhesive prior to the application of the 6 spots of adhesive; place 4 spots of adhesive near the corners of the 12" x 24" units and 2 spots near the edges of the tile at the centerline of the 24" dimension. The adhesive shall be approximately 2½" in diameter after the tile has been pressed into position on the ceiling. Acoustical units shall be placed so that the face surface of the acoustical ceiling is aligned and level.

4c. CONCEALED Z-SPLINE METHOD ¾" x 12" x 12" MOTIF'D ACOUSTONE or ¾" x 12" x 24" ACOUSTONE "F").

4c-1 Accessories Shall Be:

4c-1a 1½" cold rolled carrying channels manufactured by the U. S. Gypsum Company.

4c-1b No. 8 ga. galvanized hanger wires.

4c-1c ¾" Z-Spline manufactured by the U. S. Gypsum Company.

4c-1d No. 85 Clips manufactured by the U. S. Gypsum Company for attaching Z-Splines to bar joists or 1½" or 2" carrying channels. (No. 82-A Clip used to attach Z-Splines to 1½" channel.)

4c-1e No. 90 Clips manufactured by the U. S. Gypsum Company for attaching Z-Splines to wood furring strips or wood framing.

4c-1f 26 ga. galvanized Flat Steel Splines manufactured by the U. S. Gypsum Company.

4c-1g ACOUSTONE, Finish Channel manufactured by the U. S. Gypsum Company.

4c-1h Finish Channel Corner Plate manufactured by the U. S. Gypsum Company.

4c-1j Spring Steel Spacers.

4c-2 Installation Shall Be:

4c-2a with 1½" Carrying Channels. No. 8 ga. hanger wires shall be securely attached at 4'-0" on center. 1½" carrying channels shall be tied to the hanger wires. The 1½" carrying channels shall be hung level and at a maximum spacing of 4'-0" on center.

4c-2b with Wood Furring Strips. Wood furring strips of minimum 2" x 3" size shall be attached and leveled, at a maximum spacing of 4'-0" on center.

4c-2c with Bar Joist Construction. If lower chords of the bar joists are not level, adequate shims shall be used between the lower chord of the bar joists and the Z-Splines, when the Z-Splines are attached to the bar joists.

INSTALLATION

¾" Z-Splines shall be attached on 12" centers and at right angles to the (metal grillage by 82-A Clip) (bar joists by 85 Clip) (wood framing by No. 90 Clip). ¾" thick 12" x 24" ACOUSTONE "F" (¾" x 12" x 12" MOTIF'D ACOUSTONE) shall be supported by inserting the Z-Spline flanges into kerfed edges of the tile. Abutting edges shall be aligned by inserting Flat Steel Splines into the kerfs of the transverse edges of the tile.

ACOUSTONE Finish Channel mouldings shall be provided at the wall surfaces and Spring Steel Spacers placed in the Channel at 12" centers. A Finish Channel Corner Plate shall be used at all exterior corners. Interior corners where Finish Channel is to continue, flanges shall be cut and the web bent to form corners, overlapping channel flanges.

4d. E-Z-S SUSPENSION SYSTEM (¾" thick x 12" x 24" ACOUSTONE "F").

4d-1 Accessories Shall Be:

4d-1a 1½" cold rolled carrying channels manufactured by the U. S. Gypsum Company.

4d-1b No. 8 ga. galvanized hanger wires.

4d-1c 1¼" Painted Z-Splines manufactured by the U. S. Gypsum Company.

4d-1d No. 85 Clips manufactured by the U. S. Gypsum Company for attaching Z-Splines to bar joists or 1½" or 2" carrying channels. (82-A Clip used to attach Z-Spline to 1½" channels).

4d-1e No. 90 Clips manufactured by the U. S. Gypsum Company for attaching Z-Splines to wood furring strips or wood framing.

4d-1f Electro-galvanized 24-ga. Angle Splines manufactured for the U. S. Gypsum Company.

4d-1g Electro-galvanized 26-ga. T-Splines manufactured for the U. S. Gypsum Company.

4d-2 Installation Shall Be:

4d-2a with 1½" Carrying Channels. No. 8 ga. hanger wires shall be securely attached at a maximum of 5'-0" on centers. 1½" carrying channels shall be tied to the hanger wires. The 1½" carrying channels shall be hung level and at a spacing of a maximum 5'-0" on centers.

4d-2b with Wood Furring Strips. Wood furring strips of minimum 2" x 3" size shall be attached and leveled at a maximum spacing of 5'-0" on centers.

4d-2c with Bar Joist Construction. If the lower chords of the bar joists are not level, adequate shims shall be used between the lower chord of the bar joists and Z-Splines when the Z-Splines are attached to the bar joists.

INSTALLATION

1¼" Painted Z-Splines shall be attached on 24" centers and at right angles to the (Metal grillage by No. 82 Clip) (bar joists by No. 85 Clips) (wood furring or wood framing by No. 90 Clips). ¾" x 12" x 24" ACOUSTONE "F" mineral acoustical tile shall be placed on top of the lower flanges of the Z-Spline; Angle Splines or T-Splines shall be inserted in the kerfs of the abutting or transverse edges of the ACOUSTONE "F".

4e. GYPSUM BOARD—NAILING CHANNEL SYSTEM.

4e-1 Accessories Shall Be:

4e-1a 1½" cold rolled carrying channels manufactured by the U.S. Gypsum Company.

4e-1b No. 8 ga. galvanized hanger wires.

4e-1c Nailing Channel and Splice Plates manufactured by the U. S. Gypsum Company.

4e-1d USG Z-Board—½" x 2' x 8' Z-Board with tongue and groove edges, core treated to resist penetration of moisture.

4e-1e USG Sheathing—½" x 2' x 8' with tongue and groove edges, core treated to resist penetration of moisture.

4e-1f USG Sheetrock gypsum board ⅜", or USG Firecode "45" Sheetrock ½", or USG Firecode "60" Sheetrock ⅝" with sized paper and rounded edges.

4e-1g USG Baxboard gypsum board ⅜", or USG Firecode "45" Baxboard ½", or USG Firecode "60" Baxboard ⅝" backing boards with tongue and groove edges.

4e-1h No. 12 Ga. Galvanized Tie Wire—used to wire tie Nailing Channels to 1½" channels, bar joists or other framing members.

4e-1i Butt Joint Clip or Butt Joint Washer—used at all gypsum board joints.

4e-1j Nails shall be 12½ to 11 gauge with ring shank (16 to 20 rings per inch), medium to short diamond point, ¼" to 5/16" head. Nails shall be 1⅛" long for ⅜" board and 1¼" for ½" and ⅝" board. For fire rated constructions use 11 gauge, 16 rings per inch, 5/16" head nails.

4e-2 Installation Shall Be:

4e-2a with 1½" Carrying Channels. No. 8 ga. hanger wires shall be securely attached at a maximum of 4'-0" on centers. 1½" carrying channels shall be tied to the hanger wires. The 1½" carrying channels shall be hung level and at a spacing of a maximum 4'-0" on centers.

INSTALLATION

Nailing Channels shall be securely wire tied to 1½" carrying channels with #12 Ga. galvanized tie wire.

Maximum Channel spacing for all ⅜" gypsum board shall be 16" center to center and 24" on center for ½" and ⅝" board provided the gypsum boards have "v" tongue and groove edges or the joints are taped, otherwise the maximum spacing for ½" and ⅝" board shall be 20" center to center.

Nail Spacing shall be 6" center to center in all cases except where fire rated construction details specify otherwise. End joints are to be staggered at least one support spacing. Butt joints are to occur under nailing channel where butt joint clips or washers must be used 6" on center.

4f. CORRUTONE SUSPENSION SYSTEM (1 5/16" or 2 5/16" thick x 24" x 24" or 24" x 48" CORRUTONE Metal Acoustical Panel)

4f-1 Accessories Shall Be:

4f-1a 1½" cold rolled carrying channels manufactured by the U. S. Gypsum Company.

4f-1b No. 8 ga. galvanized hanger wires.

4f-1c 1¼" Painted Z-Splines manufactured by the U.S. Gypsum Company.

4f-1c 1¼" Painted Z-Splines manufactured by the U.S. Gypsum Company.

4f-1d No. 85 Clips manufactured by the U. S. Gypsum Company for attaching Z-Splines to bar joists or 1½" or 2" carrying channels. (82-A Clip used to attach Z-Spline to 1½" channels.)

4f-1e No. 90 Clips manufactured by the U. S. Gypsum Company for attaching Z-Splines to wood furring strips or wood framing.

4f-2 Installation Shall Be:

4f-2a with 1½" Carrying Channels. No. 8 ga. hanger wires shall be securely attached at a maximum spacing of 5'-0" on centers. 1½" carrying channels shall be tied to the hanger wires. The 1½" carrying channels shall be hung level and at a maximum spacing of 5'-0" on centers.

4f-2b with Wood Furring Strips. Wood furring strips of minimum 2" x 3" size shall be attached and leveled at a maximum spacing of 5'-0" on centers.

4f-2c with Bar Joist Construction. If the lower chords of the bar joists are not level, adequate shims shall be used between the lower chord of the bar joists and Z-Splines when the Z-Splines are attached to the bar joists.

INSTALLATION

1¼" Painted Z-Splines shall be attached on 24" or 48" centers and at right angles to the (Metal grillage by No. 82-A Clip) (Bar joists by No. 85 Clips) (wood furring or wood framing by No. 90 Clips). 2 5/16" thick x 24" x 24" or 24" x 48" CORRUTONE Metal Acoustical Panels shall be placed on top of the lower flanges of the Z-Splines. A mineral fiber pad shall be placed on the upper surface of all CORRUTONE Panels.

4g. STAPLING METHOD (SLOTTED AUDITONE: Use ¾" thick 12" x 24" tongue and groove units. PERFORATED AUDITONE: Use ½" or ¾" thick 12" x 24" tongue and groove units. RANDOM PERFORATED AUDITONE: Use ½" or ¾" thick 12" x 24" tongue and groove units.)

4g-1 Accessories Shall Be:

4g-1a 1" x 3" minimum size wood furring strips (when necessary).

4g-1b Staples shall be 9/16" long, coated.

4g-2 Installation Shall Be:

Wood furring strips shall be installed and leveled (12" on center with ½" thick AUDITONE) (12" or 16" on center with ¾" thick AUDITONE for the square pattern), (12" on center for the diagonal pattern). The acoustical units shall be attached by stapling the advancing tongue edge of the AUDITONE to the wood furring strips or wood framing.

4h. NAILING METHOD (SLOTTED AUDITONE: Use ¾" thick 12" x 24" tongue and groove units. PERFORATED AUDITONE: Use ½" or ¾" thick 12" x 24" tongue and groove units. RANDOM PERFORATED AUDITONE: Use ½" or ¾" thick 12" x 24" tongue and groove units.

4h-1 Accessories Shall Be:

4h-1a 1" x 3" minimum size wood furring strips (when necessary).

4h-1b Nail shall be:

For ½" AUDITONE—Use 1⅛" blued lath nails.
For ¾" AUDITONE—Use 1¼" blued lath nails.

4h-2 Installation Shall Be:

Wood furring strips or wood framing shall be installed and leveled (12" on center with ½" thick AUDITONE), (12" or 16" on center with ¾" thick AUDITONE for the square pattern), (12" on center for the diagonal pattern). The acoustical units shall be installed by nailing the advancing tongue edge of the AUDITONE, wood fiber acoustical tile, to the wood furring strips or wood framing.

4i. SCREW APPLICATION (SLOTTED AUDITONE: Use ¾" thick 12" x 24" tongue and groove units. PERFORATED AUDITONE: Use ½" or ¾" thick 12" x 24" tongue and groove units. RANDOM PERFORATED AUDITONE: Use ½" or ¾" thick 12" x 24" tongue and groove units.) Screwed to wood furring strips, wood framing, or ½" USG Z-Board or SHEETROCK.

4i-1 Accessories Shall Be:

4h-1a 1" x 3" (minimum size) wood furring strips.
4h-1b ½" USG Z-Board nailed to wood framing.
4h-1c ½" SHEETROCK board nailed to wood framing.

4i-2 Installation Shall Be:

4h-2a Wood furring strips or wood framing shall be installed and leveled (12" on center with ½" thick AUDITONE), (12" or 16" on center with ¾" thick AUDITONE for square pattern), (12" on center for the diagonal pattern).
4i-2b USG Z-Board shall be nailed to wood framing.
4i-2c The acoustical units shall be installed by screwing the advancing tongue edge of the AUDITONE tile to the wood framing, ½" USG Z-Board or SHEETROCK.

Only three screws per tile (12" x 24" Tongue and Groove AUDITONE) are required to mechanically attach the tile to either ½" USG Z-Board or SHEETROCK. Use a ⅞" long No. 4 flat head screw for ½" AUDITONE, a 1" long No. 4 flat head screw or ¾" AUDITONE. Space wood furring strips or channels not to exceed 16" on center when using ⅜" thick gypsum boards or 24" on center with ½" thick gypsum boards.

4j. SCREW APPLICATION (3/16" thick x 12" x 12", 12" x 24" or 24" x 48" Perforated Asbestos Board ONLY).

4j-1 Accessories Shall Be:

4j-1a 1" x 3" (minimum size) wood furring strips (when necessary).
4j-1b 1¼" x 12" x 24" mineral wool pad wrapped in flameproofed membrane.
4j-1c Screws shall be No. 6 flat head screws not less than ¾" long.

4j-2 Installation Shall Be:

Perforated Asbestos Board shall be securely attached to wood furring strips spaced 12" on center by fastening screws into the wood furring strips and through the holes of the Perforated Asbestos Board. The mineral fiber pad shall be placed between the wood furring strips and on top of the Perforated Asbestos Board.

RELATED INCLUSIONS

AUDITONE may be economically stapled, nailed or screwed to wood supports spaced not to exceed 12" on center for either the square or diagonal pattern.

Size of nailing strips	Maximum spacing of supports
1"x2" or 1"x3"	24"
2"x2" or 2"x3"	36"

Where a suspended ceiling is required, a double grillage is recommended, using as main members (2" x 2") or (2" x 3"), nailing strips spaced as shown above.

Steel Channels not less than 1½" deep spaced up to 48" on centers may be used in lieu of the main wood members. The wood nailing strips may be wired to these channels.

Nailing strips (2" x 2") or (2" x 3") will successfully span 48" if a 1" x 2" stiffener strip is nailed to them midway between and parallel to the 48" supports.

Nailing strips may be spaced 16" on center for square pattern and 12" on center for diagonal pattern.

4k. PERFATONE MECHANICALLY SUSPENDED.

4k-1 Accessories Shall Be:

4k-1a 1½" cold rolled carrying channels manufactured by the U. S. Gypsum Company.
4k-1b No. 8 ga. galvanized hanger wires.
4k-1c Tee Runners manufactured for the U. S. Gypsum Company.
4k-1d P-150 Wire Clips manufactured by the U. S. Gypsum Company for attaching the Tee Runners to the 1½" carrying channels.
4k-1e PERFATONE Finish Channel manufactured by the U. S. Gypsum Company.

4k-2 Installation Shall Be:

4k-2a with 1½" Carrying Channels. No. 8 ga. hanger wires shall be securely attached at 4'-0" on centers. 1½" carrying channels shall be tied to the hanger wires. The 1½" carrying channels shall be hung level and at a maximum spacing of 4'-0" on centers.

INSTALLATION

Tee Runners shall be attached 2'-0" on centers by P-150 Clips to the 1½" carrying channels. PERFATONE, acoustical units, with the mineral fiber pad and pad support included, shall be securely snapped into the Tee Runners. PERFATONE Finish Channel moulding shall be prepared at the wall surfaces.

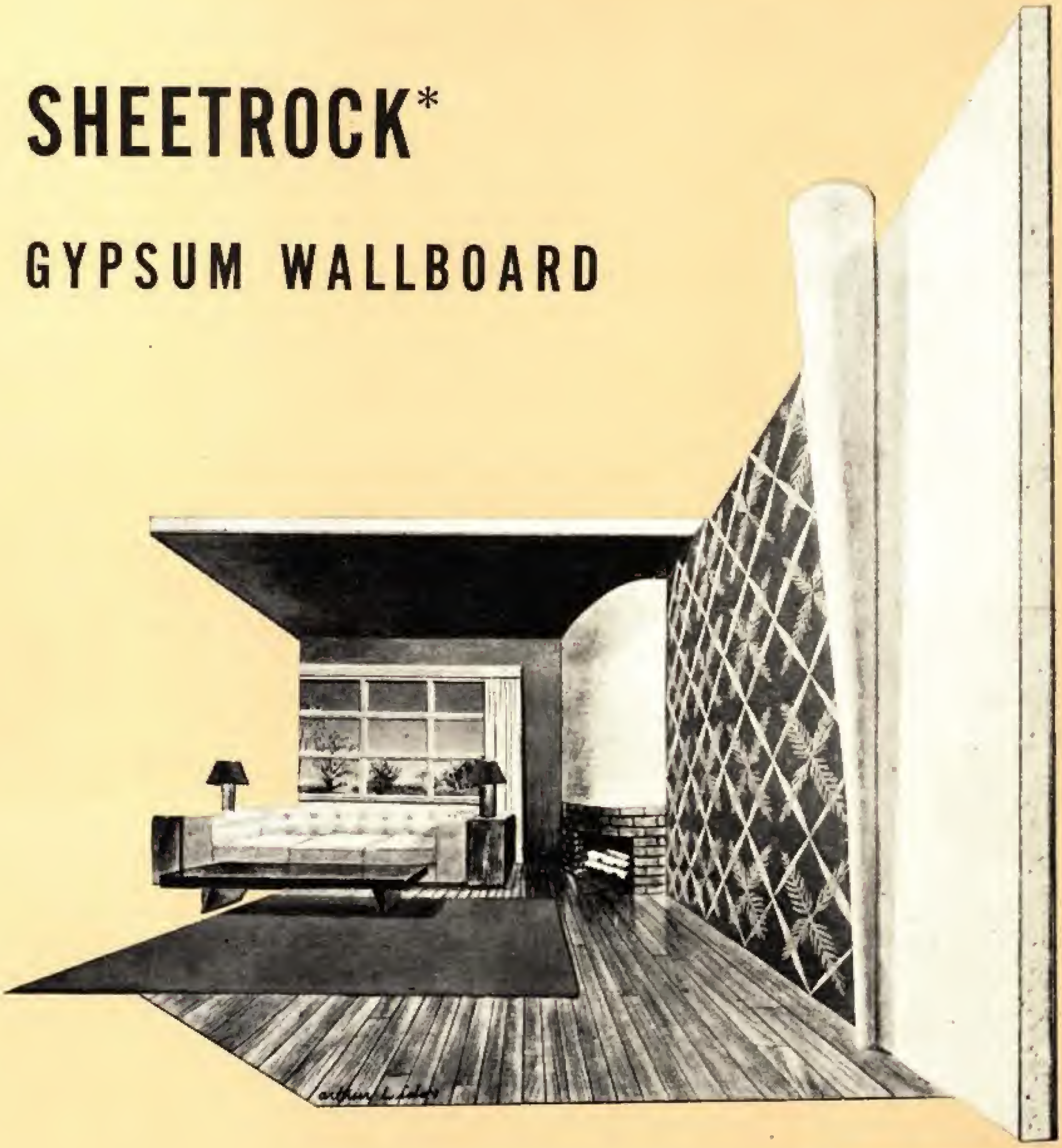
"ACOUSTONE", "AUDITONE", "MOTIF'D", "USG", "ROCKLATH", "SHEETROCK", "PERFATONE" mentioned in this publication are registered trademarks; "CORRUTONE" is a trademark owned by United States Gypsum and used by it to distinguish its products. "ACOUSTONE" as used herein identifies the particular mineral acoustical tile; "CORRUTONE" as used herein identifies the particular perforated, corrugated metal acoustical panel; "AUDITONE" as used herein identifies the particular wood fiber acoustical tile; "MOTIF'D" as used herein identifies the particular mineral acoustical tile with decorated surface; "USG" as used herein identifies the particular sheathing and sound insulation; "SHEETROCK" as used herein identifies the particular gypsum wallboard; "ROCKLATH" as used herein identifies the particular gypsum lath or plaster base; "PERFATONE" as used herein identifies the particular perforated metal acoustical tile; all manufactured only by United States Gypsum.

A.I.A. File 23-L

TECHNICAL INFORMATION

SHEETROCK*

GYPSUM WALLBOARD



UNITED STATES GYPSUM

1959

*T.M. Reg. U.S. Pat. Off.

A.I.A. File 23-L

SHEETROCK*
GYPSUM WALLBOARD

DESCRIPTION

SHEETROCK is a mill fabricated gypsum wallboard composed essentially of a fireproof gypsum core encased in a heavy manila-finished paper on the face side and a strong liner paper on the back side. The face paper is folded around the long edges to reinforce and protect the core, and the ends are square cut and smooth finished.

FUNCTION AND UTILITY

Without the addition of plaster, SHEETROCK wallboard furnishes to interior walls and ceilings a durable surface suitable for any type of decorative treatment, and permits repeated redecoration during the life of the building. The joints between adjacent boards may be reinforced and concealed with the PERF-A-TAPE* Joint System, or may be featured by leaving exposed or covering with a decorative moulding.

SHEETROCK wallboard provides the following features:

Dry Walls. Mill fabricated boards eliminate excessive moisture in construction.

Fireproof. The gypsum core will not support combustion or transmit temperatures greatly in excess of 212° F. until completely calcined,—a slow process. See technical data for Fire Resistance Ratings.

Crack Resistance. "Welded" together by the PERF-A-TAPE* Joint System, SHEETROCK wallboard forms walls and ceilings exceptionally resistant to cracks caused by frame movement, vibration, or minor settlement.

Speed. Mill fabricated boards are easily cut and quickly applied.

Quick Decoration. Essentially a "dry" material, SHEETROCK wallboard permits painting or other decoration, and the installation of metal or wood trim, almost immediately.

Non-Warping. Expansion or contraction under normal atmospheric changes is negligible and does not cause harmful warping or buckling.

GENERAL LIMITATIONS OF USE

1. Not recommended where exposure to moisture is extreme or continuous.

2. Must be adequately protected against wetting when used as a base for tile.

3. Maximum Spacing of Framing Members: ½" and ⅝" SHEETROCK wallboard is designed for use on framing centers from 16" to 24"; ⅜" and ¼" SHEETROCK, on centers up to 16". SHEETROCK wallboard used on 24" centers on ceilings must be applied across framing members. When so applied, the use of headers behind joints is not required. On walls, where SHEETROCK is applied across framing on 24" centers and joints reinforced, headers are not required.

4. Application of SHEETROCK over ¾" wood furring applied across framing is not recommended since the relative flexibility of the furring under impact of the hammer tends to loosen nails already driven.

STANDARD SPECIFICATIONS

SHEETROCK wallboard complies with the following Standard Specifications for Gypsum Wallboard: Federal Specification SS-W-51a. American Society for Testing Materials Specification ASTM C36.

FIRE RESISTANCE RATINGS FOR SHEETROCK WALLBOARD

(Tests conducted in recognized laboratories according to ASTM Specifications.) (Copies available on Request)

TYPE CONSTRUCTION	WALLBOARD		RATING	REFERENCE
PARTITIONS—WOOD FRAMING Wood studs faced both sides as indicated. Ratings apply on both Bearing and Non-Bearing partitions, except as shown.	⅜" SHEETROCK		25 Minutes	NBS—BMS 92
	½" SHEETROCK		40 Minutes	NBS—BMS 92
	½" SHEETROCK, (mineral wool batts nailed to studs.)		1 Hour	NBS—BMS 92
	½" SHEETROCK, (loose mineral wool fill.)	Non-Bearing	1 Hour	NBS—BMS 92
	½" SHEETROCK FIRECODE 45		45 Minutes	UL
	⅝" SHEETROCK FIRECODE 60		1 Hour	UL
	2 layers ⅜" SHEETROCK		1 Hour	Fire Test. Lab.
	2 layers ½" SHEETROCK	Non-Bearing	1½ Hours	NBS—FP2708
	2 layers ⅝" SHEETROCK FIRECODE 60		2 Hours	UL
PARTITIONS—STEEL FRAMING Nailable steel stud, steel floor and ceiling runner faced both sides as indicated. Joints treated.	⅝" SHEETROCK FIRECODE 60	Non-Bearing	1 Hour	Fire Test. Lab.
TRUSSTEEL* Studs, steel floor and ceiling runner faced both sides as indicated. Joints treated.	⅜" SHEETROCK over ⅜" BAXBORD* Backing Board (Non-Bearing)		45 Minutes	Fire Test. Lab.
	½" SHEETROCK FIRECODE 45 over ⅜" BAXBORD (Non-Bearing)		1 Hour	Fire Test. Lab.
CEILINGS—WOOD FRAMING Wood joists faced with rough and finish floor, and on the under side as indicated.	½" SHEETROCK (Nailed to joists with 1¾", No. 12 ga. nails, having ½" heads.)		25 Minutes	NBS—BMS 92
	½" SHEETROCK FIRECODE 45		45 Minutes	UL
	⅝" SHEETROCK FIRECODE 60		1 Hour	UL
	2 layers ⅜" SHEETROCK		30 Minutes	NBS—BMS 92
	2 layers ½" SHEETROCK		1 Hour	NBS—FP 2926
CEILINGS—STEEL FRAMING Open web steel joist-concrete floor construction faced as indicated. Joints taped or untaped.	⅝" SHEETROCK FIRECODE 60		1 Hour	UL
	⅝" BAXBORD* FIRECODE 60		1 Hour	UL
	2 layers—BASE LAYER ⅝" BAXBORD FIRECODE 60 FACE LAYER ½" SHEETROCK FIRECODE 45		1½ Hours	UL
STEEL COLUMNS	4 layers ½" SHEETROCK		2½ Hours	NBS Test 315
	3 layers ½" SHEETROCK		1½ Hours	NBS Test 304
	2 layers ½" SHEETROCK		1 Hour	NBS Test 303

FIRE HAZARD CLASSIFICATION—*A rating of 10 to 15 is now applicable to* SHEETROCK GYPSUM WALLBOARD.

*Trademark Reg. U. S. Pat. Off.

"USG", "SHEETROCK", "PERF-A-TAPE", "BAXBORD", "FIRECODE", "PERF-A-BEAD", "DUR-A-BEAD", "PERF-A-TRIM", "TEXOLITE", "BRIDJOINT", "TRUSSTEEL", "TRUS-LOK", are trademarks owned and/or registered by United States Gypsum. "USG" identifies the particular gypsum board sheathing or laminating adhesive, "SHEETROCK" identifies the particular gypsum wallboard or adhesive, "BAXBORD" and "FIRECODE" identify the particular gypsum wallboards, "PERF-A-TAPE" identifies the particular joint sealing tape, "PERF-A-BEAD" and "DUR-A-BEAD" identify the particular corner bead, "PERF-A-TRIM" identifies the particular casing, "BRIDJOINT" and "TRUS-LOK" identify the particular clips, "TRUSSTEEL" identifies the particular stud, "TEXOLITE" identifies the particular interior paint manufactured only by United States Gypsum.

PRODUCT DESCRIPTION (See also pages 4–6)	SHEETROCK WALLBOARDS									FIRECODE		BAXBORD		
	TAPERED EDGE				(A) INSULATING (FOILBACK)			WOOD GRAINED	PANEL	45—60		BACKING BOARDS		
Thickness, inches	¼	⅜	½	⅝	⅜	½	⅝	⅜ only	⅜ only	½	⅝	⅜	½	⅝
Length, Ft. 8, 9, 10, 12 or 14	x(B)	x	x	x	x	x	x			x	x			
8 and 10								(C)	x(B)					
8												x	x	x
Width 16″									x					
2′												x	x	x
4′	x	x	x	x	x	x	x	x	x	x	x	x		
Edges—Tapered	x	x	x	x	x	x	x			x	x			
Beveled								x						
Square								x						
V						x	x						x	x
Round					x				x			x		
Face Finish—Plain Ivory (D)	x	x	x	x	x	x	x		x	x	x			
Ranch Pine								x(E)	x					
Striated									x					
Sablewood								x(F)						
Cherrywood								x(F)						

INSTALLATION SYSTEMS (See also pages 6–11)

	SHEETROCK WALLBOARDS									FIRECODE		BAXBORD		
	TAPERED EDGE				(A) INSULATING (FOILBACK)			WOOD GRAINED	PANEL	45—60		BACKING BOARDS		
Thickness, inches	¼	⅜	½	⅝	⅜	½	⅝	⅜ only	⅜ only	½	⅝	⅜	½	⅝
Finish for interior walls, ceilings, partitions														
Single Layer—														
over existing walls	x	x						x	x					
over wood framing		x	x	x	x	x	x	x	x	x	x			
Double walls over wood framing—														
Base		x										x	x	x
finish		x						x	x					
Single layer over steel joists with concrete floor—														
Base for ceilings											x		x	x
Finish for ceilings										x	x			
Single Layer over metal grillage		x	x	x	x	x	x			x	x			
Single Layer over nailable steel studs and/or channels		x	x	x	x	x	x			x	x			
Finish for non-bearing partitions														
Two layers over TRUSSTEEL studs—														
Base												x(G)		
Finish		x						x	x					
Insulation (foilback) and vapor barrier for ceilings and exterior walls														
Single layer over wood framing					x	x	x							
Acoustical ceiling base														
Single layer over metal grillage			x	x		x	x			x	x		x	x
Ceramic or other tile wall base														
Single layer over wood framing		x	x	x						x	x			

SPECIFICATIONS (See pages 12–16)

(A) Made by laminating aluminum foil on back surface of BAXBORD or any SHEETROCK except Panel type.
(B) 7′, 9′ and other lengths available depending on location.
(C) Woodgrain SHEETROCK wallboard available in 7′, 8′, 9′ and 10′ lengths.
(D) Suitable for painting, covering with wallpaper, or other decoration.
(E) Square edge. (F) Beveled edge.
(G) 2′ wide—⅜″ BAXBORD available on special order for SHEETBOARD WALLBOARD TRUSSTEEL stud partition system.

SHEETROCK
GYPSUM WALLBOARD

TAPERED EDGE SHEETROCK

The long edges are tapered on the face side to form a shallow channel for the joint reinforcement, providing smooth, continuous wall and ceiling surfaces. Tapered Edge is a marked improvement over, and has supplanted, recessed edge formation. Made in four thicknesses:

Five-Eighths Inch. ⅝″ Tapered Edge SHEETROCK is recommended for the finest single layer drywall construction. The greater thickness provides increased resistance to fire exposure and transmission of sound.

One-Half Inch. ½″ Tapered Edge SHEETROCK is recommended for single layer use in new residential construction, with all joints reinforced and concealed with the PERF-A-TAPE Joint System.

Three-Eighths Inch. Differs from ½″ Tapered Edge SHEETROCK wallboard only in thickness and weight; it is used principally in repair and remodel work.

Quarter-Inch. A lightweight, low cost, utility gypsum wallboard, easily applied over old wall and ceiling surfaces.

Thickness: ¼″, ⅜″, ½″, ⅝″
Width: 4′
Length: 8′, 9′, 10′, 12′ or 14′ (*Note: ¼″ 8′, 10′ only*)
Edges: Tapered
Finish: Ivory, paper, suitable for paint, wallpaper or other decoration.

SHEETROCK FIRECODE 60 and FIRECODE 45

⅝″ SHEETROCK FIRECODE 60 and ½″ SHEETROCK FIRECODE 45 are gypsum wallboards which combine all the advantages of regular SHEETROCK with increased resistance to fire exposure—the result of a specially formulated core containing special mineral materials.

By Underwriters' Laboratories tests, SHEETROCK FIRECODE 60 and SHEETROCK FIRECODE 45 afford 60 minute and 45 minute fire resistance ratings, respectively, when used in certain partition and floor and ceiling constructions.

Limitations of Use

1. Same as General Limitations, page 2.

2. In order to attain the 1 hour and the 45 minute fire resistance ratings, the construction of the partition and/or floor and ceiling assemblies must be in accordance with the respective Underwriters' Laboratories, Inc., panel designs. See Technical Data, for description of panel constructions.

3. Maximum Spacing of Framing Members: 16″ o.c. where fire rating required, otherwise 24″.

Thickness: ½″, ⅝″
Width: 4′
Length: 8′, 9′, 10′, 12′ or 14′
Edges: Tapered
Finish: Ivory, suitable for paint, wallpaper, or other decoration.

WOODGRAINED SHEETROCK

Special paper with a Ranch Pine, Cherrywood or Sablewood finish produced from photographic reproductions of natural wood panels is laminated to the face of regular SHEETROCK wallboard to produce a board having all the regular advantages, except reinforced joints, plus the economy of uniquely realistic appearing wood-grained predecoration. The factory finish may be further treated by applying either paste wax or satin finish varnish.

Colored nails used for inconspicuous nailing.

Thickness: ⅜"
Width: 4'
Length: 7', 8', 9', 10'.
Edges and Finish: Beveled edges for sablewood and cherrywood.
Finishes: Square edges for ranch pine finish.

PANEL SHEETROCK

Panel SHEETROCK products have the same core composition as regular SHEETROCK Wallboard, and differ only in width and edge formation.

Plain. Face surface is highly calendered ivory paper suitable for any type of decorative treatment.

Ranch Pine. Face surface is high quality paper on which an accurate photographic reproduction of selected random width knotty pine is printed in color.

Striated. Face surface is a handsome pattern of lengthwise striations of varied widths and depths, predecorated in a neutral tone to accentuate the pattern.

Thickness: ⅜"
Width: 16"
Length: 8', 9', 10'
Edges: Round
Finish: Ivory, Ranch Pine, Striated.

INSULATING SHEETROCK

Insulating SHEETROCK wallboard is made by laminating a sheet of bright aluminum foil on the back surface of BAXBORD or regular SHEETROCK.

Insulation. The bright metal foil has the property of reducing heat flow out of the home in the winter, and into the home in the summer. The thermal insulating value of an air space faced with Insulating SHEETROCK, properly applied in a wall, is equivalent to that of ½" fiber insulating board. On ceilings, in summer, it is equivalent to approximately 2" thickness of fiber insulating board.

Vapor Barrier. Insulating SHEETROCK provides an efficient vapor barrier which resists the passage of moisture vapor through the interior lining of exterior walls, and minimizes the possibility of condensation within the wall, and of consequent failure of the exterior paint film. See page 7 for complete discussion and Vapor Permeability figures.

Limitations of Use

1. Same as General Limitations, page 2.
2. Do not use as a base for ceramic or other tile.

Thickness *Width* *Length* *Edges* *Finish*	The same as regular SHEETROCK and BAXBORD.

BAXBORD* GYPSUM BACKING BOARDS

DESCRIPTION

BAXBORD is a low cost, easy to handle gypsum board encased on both sides with strong gray paper.

Three-Eighths Inch—⅜" BAXBORD is manufactured for use as a base for job-laminated double wall SHEETROCK wallboard system, and SHEETROCK Wallboard TRUSSTEEL* Stud Partition System. May also be used as a base for acoustical tile, on ceilings, when nailed perpendicular to wood joists spaced not over 16" o.c.

One-Half Inch. ½" BAXBORD Gypsum Backing Board is the recommended base for adhesively or mechanically applied acoustical tile. Erect ½" BAXBORD at right angles to framing members, nailing 7" on centers for 16" spacing of supports, and 5" on centers for 24" spacing of supports. It may be nailed to metal supporting members such as Jackson, Pomeroy or similar bars, nailable steel joists, or to wood framing.

Five-Eighths Inch—⅝" BAXBORD FIRECODE 60 is manufactured for use as a base for adhesive or mechanical application of acoustical tile when a one-hour fire-rating is required. By Underwriters' Laboratories, Inc. test, BAXBORD FIRECODE 60 affords a 60-minute fire resistance rating when used in open web steel joint-concrete floor or roof and ceiling construction. "V" shaped edges minimize air and dirt infiltration.

Limitations of Use

1. Same as General Limitations, Page 2.
2. In order to attain the 1-hour fire resistance rating with ⅝" BAXBORD FIRECODE 60, the construction must be in accordance with the floor or roof and ceiling design listed by Underwriters' Laboratories, Inc. See page 2 for design details.
3. For ⅝" BAXBORD FIRECODE 60, maximum spacing of framing members; 16" o.c. where fire rating is required, otherwise 24".
4. Where ½" or ⅝" BAXBORD is to be used as acoustical tile base, store acoustical tile and base in a dry area protected from the elements. Provide flat, solid support during storage. Take necessary precautions to prevent condensation in the storage area and within the structure in which the acoustical base is applied.

Thickness: BAXBORD: ⅜", ½"; BAXBORD FIRECODE: ⅝".
Width: ⅜"—2' and 4'; ½" and ⅝"—2' only.
Length: 8'.
Edges: ⅜" BAXBORD, round edge; ½" BAXBORD and ⅝" BAXBORD FIRECODE, "V" edge.
Finish: Gray paper, not suitable as an exposed surface.

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*Trademark Reg. U.S. Pat. Off.

SINGLE LAYER SYSTEM USING SHEETROCK

wallboard for walls, ceilings, partitions—over wood framing

DESCRIPTION

SHEETROCK is usually nailed directly to wood framing members, applying ceilings first, then walls. Boards should be accurately cut to fit and joints loosely butted. End joints should be staggered. Apply SHEETROCK either vertically with long edges parallel to framing members, or horizontally, with long edges at right angles to framing. SHEETROCK may be attached to supports by several methods. The standard practice is single nailing, nails spaced 7" o.c. on ceilings and 8" o.c. on walls.

ALTERNATE NAILING METHODS

SHEETROCK Brand Adhesive—Nail-On. See technical details and specifications page 11.

Double Nailing Method. "Nail-pop" frequency due to loosely nailed wallboard, may be minimized by double nailing. This method is added assurance that the board will be nailed tight to the framing. Apply first nails spaced 12" o.c. with the second nail in close proximity (2"). Double nailing is generally more effective in combating loose application of wallboards than the standard single nailing method, but does not provide the advantages of SHEETROCK Brand Adhesive—Nail on method.

Furring system—SHEETROCK may also be nailed on furring strips installed over a solid backing, such as an existing wall surface.

PRODUCTS AND ACCESSORIES

Tapered Edge, FIRECODE, Insulating or Wood Grained SHEETROCK; PERF-A-TAPE Joint Cement and/or Topping, PERF-A-TAPE Reinforcing Tape; and GWB-54, or 4D, 5D, 6D. Cooler type Nails. Optional: DUR-A-BEAD or PERF-A-BEAD Corner Reinforcement.

FUNCTION AND UTILITY OF HORIZONTAL APPLICATION

1. Reduces necessary joint treatment footage up to 25 per cent.
2. Strongest dimension of board runs across framing members.
3. Spans unevenness of framing members' alignment and spacing.
4. Eliminates need for headers.
5. Each board braces more framing members together.
6. Joints on walls are at a convenient height for finishing.

LIMITATIONS OF USE—See page 2.

BACK-BLOCKING JOINT REINFORCEMENT

Back-Blocking was designed by U. S. Gypsum Company to minimize the condition known as "ridging." The Back-Blocking system, Research approved, has been extensively field tested and produces outstanding results, and is a U.S. Gypsum Company Patented System. (Pat. No. 2736929). A non-exclusive license to use is available on request.

Back-Blocking consists of laminating cut-to-size pieces of SHEETROCK Wallboard to the back surface of the wallboard directly behind the joints providing reinforcement to neutralize stresses which cause ridging.

We recommend Back-Blocking all joints along tapered edges, and floating and Back-Blocking all end joints, side walls and ceilings. End joints, side walls and ceilings may be tapered at the discretion of the owner, architect, contractor or applicator.

PERF-A-TAPE JOINT REINFORCEMENT AND CONCEALMENT

PERF-A-TAPE joint cement is used to apply and bond PERF-A-TAPE to wallboard. PERF-A-TAPE Joint Cement and/or Topping is applied to conceal taped joints and nail heads.

SHEETROCK	Bending Radii	
THICKNESS	LENGTHWISE	WIDTH
½"	20'**	. .
⅜"	7½'	25'
¼"	5'	15'

**Bending two ¼" pieces successively permits radii shown for ¼" SHEETROCK.

BENDING SHEETROCK

To bend SHEETROCK wallboard, place a stop at one end of the curve and then gently and gradually push on the other end of the board, forcing the center against the framing until the curve is complete.

By moistening the face and back paper thoroughly and allowing the water to soak well into the core, the board may be bent to still shorter radii. When the board dries thoroughly, it will regain its original hardness.

DOUBLE WALL SYSTEM USING SHEETROCK

wallboard for walls, ceilings, partitions—over wood framing

DESCRIPTION

This consists of two layers of ⅜" gypsum wallboard laminated together on the job. A base layer of BAXBORD or SHEETROCK is nailed to the framing, and a face layer of SHEETROCK is adhesively applied to the base layer. SHEETROCK joints are reinforced and covered by PERF-A-TAPE Joint System.

PRODUCTS AND ACCESSORIES

⅜" BAXBORD or Tapered Edge SHEETROCK (plain or insulating type) for base layer; ⅜" Tapered Edge, Wood Grained or Panel SHEETROCK for face layer; PERF-A-TAPE Joint Cement; PERF-A-TAPE Topping; PERF-A-TAPE Reinforcing Tape; 4d cooler type or GWB-54 nails Optional: DUR-A-BEAD* or PERF-A-BEAD* Corner Reinforcement.

FUNCTION AND UTILITY

Walls and ceilings so constructed offer greater strength, greater fire resistance and greater resistance to sound transmission. Moreover, they're highly resistant to cracking, easy to decorate; and they minimize the possibility of nail "pops" and discoloration over nail heads. Speedy erection cuts building time, permits early occupancy.

LIMITATIONS OF USE—See page 2.

(items 1 and 2 under General Limitations)

3. Maximum Spacing of Framing Members:
   Ceilings—⅜" Base layer maximum spacing 16" o.c.
   If 24" spacing is to be used, ½" SHEETROCK or ½" BAXBORD applied with the long dimension across the framing must be used as a base layer.
   Side walls—⅜" BAXBORD or SHEETROCK may be used on spacing up to 24" o.c. as a base layer.
4. Framing shall be spaced not over 16" o.c. where a 1 hour fire rating is required.

PANEL SHEETROCK WALLBOARD SYSTEM

Finish for walls, partitions—over wood framing

DESCRIPTION

This panel wallboard is nailed in a single layer direct to wood framing in new or existing construction. The 16" wide round edge units are butted together to feature the joint. No further treatment of the joint is necessary. Application to existing walls is sometimes done adhesively, using PERF-A-TAPE Joint Cement. With plain ivory Panel SHEETROCK, suitable for painting, nails are concealed with PERF-A-TAPE Topping. With Ranch Pine and Striated Panel SHEETROCK, matching colored nails are used.

PRODUCTS AND ACCESSORIES

Panel SHEETROCK; either plain nails with PERF-A-TAPE Cement nail concealment; colored nails; or adhesive.

FUNCTION AND UTILITY

Featured joints provide a pleasing paneled effect. Lightweight, easy to handle panels provide quick erection. Ideal for new construction or for covering existing walls. Fits any modern decor.

LIMITATIONS—See page 2.

NOTE: The paint film, at Plain Panel SHEETROCK joints may discolor slightly over an extended period if panels are erected at right angles to furring, on walls with extreme temperature and humidity differentials, on each side of the panels.

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*T.M. Reg. U.S. Pat. Off.

INSULATING SHEETROCK WALLBOARD (FOIL BACK) VAPOR BARRIER SYSTEM

For ceiling, and exterior walls—over wood framing

DESCRIPTION

Insulating Sheetrock wallboard is made by laminating a sheet of bright aluminum foil on the back surface of any Sheetrock except Panel. It is effective as a vapor barrier for exterior walls and ceilings when applied (1) with foil surface next to the studs in single layer application or (2) as the base layer (with foil surface next to the studs) in the double layer system. A thermal insulating value is achieved when Sheetrock is installed with the aluminum foil facing an air space of ¾″ or more.

PRODUCTS AND ACCESSORIES

Insulating Tapered Edge, Firecode or Wood Grained Sheetrock (also Baxbord for double layer installation); Perf-A-Tape Joint Cement, Perf-A-Tape Topping; Perf-A-Tape Reinforcing Tape; GWB-54, 4D, 5D or 6D nails. Optional: Dur-A-Bead or Perf-A-Bead Corner Reinforcement.

FUNCTION AND UTILITY

Vapor Barrier. Insulating Sheetrock provides an efficient vapor barrier which resists the passage of moisture vapor through the interior lining of exterior walls, and minimizes the possibility of condensation within the wall, and of consequent failure of the exterior paint film. See Technical Data for complete discussion and Vapor Permeability figures.

Insulation—Insulating Sheetrock wallboard installations keep interiors cooler in the summer by reducing heat flow into the home, and in the winter keep interiors warmer and fuel bills lower by reducing the heat flow upward and outward.

SHEETROCK WALLBOARD AS A BASE FOR CERAMIC OR OTHER TILE—*Adhesive Application*

DESCRIPTION

Sheetrock is recommended as a base for walls which are finished with ceramic or other type tile, in bathrooms, kitchens, corridors, stairways, etc. In new construction ½″ or ⅝″ Sheetrock is nailed direct to studs 16″ c to c. ⅜″ Sheetrock when used must be further supported by attachment to headers placed between studs at various points. (See Limitation of Use below). In bathrooms the Sheetrock and tile should be carried at least 6″ above the shower head. Sheetrock should receive two coats of varnish or other waterproofing agent before adhesive and tiles are applied.

PRODUCTS AND ACCESSORIES

⅜″, ½″, ⅝″ tapered edge Sheetrock; GWB-54 or 4D nails; varnish or other waterproofing agent compatible with adhesive; adhesive (specified by tile manufacturer) and tile. Optional: metal trim.

FUNCTION AND UTILITY

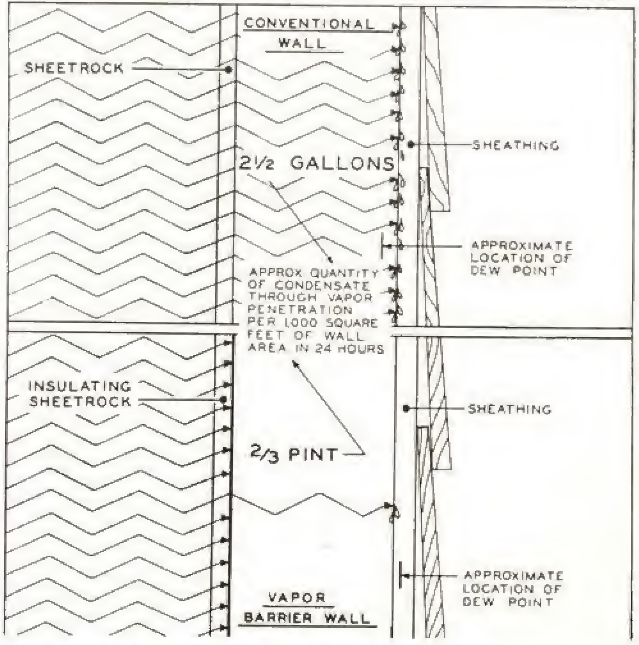
Using Sheetrock as a base, new tilework may be installed over existing surfaces without tearing out old walls. Erection is fast; there is no waiting for mortar coats to set; there is less cleanup afterwards. Sheetrock as a base is lightweight, yet strong; it is easy to handle. There may be some overall lowering of initial and maintenance costs.

LIMITATIONS OF USE

1. Foil backed (insulating) Sheetrock or Baxbord should not be used as backing for tile.
2. When ⅜″ Sheetrock is to be used on studs spaced 16″ o.c. or ½″ or ⅝″ Sheetrock on studs spaced more than 16″ o.c., suitable blocking shall be installed between all studs: one row of blocking located approximately 1″ above the top of the tub or receptor and another row at the mid point between the tub and ceiling.

ILLUSTRATION OF IMPORTANCE OF VAPOR BARRIER

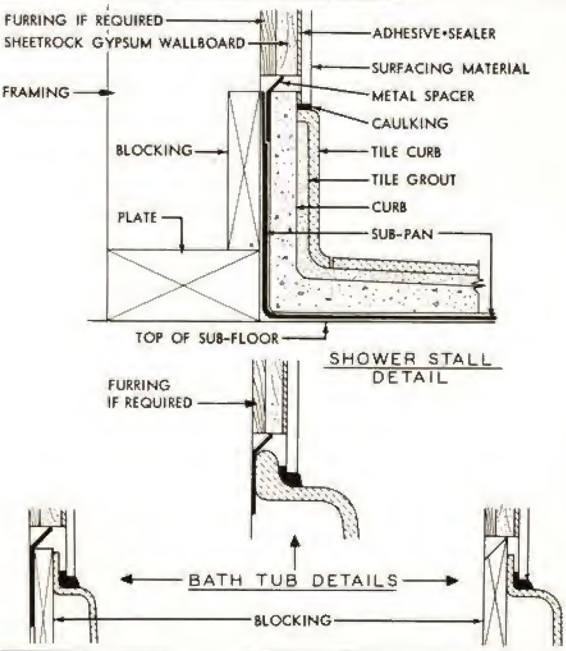
INSIDE ATMOSPHERE		OUTSIDE ATMOSPHERE
70°F	TEMPERATURE	10°F
45%	RELATIVE HUMIDITY	90%
3.63	GRAINS MOISTURE PER CU. FT.	0.69
0.332 IN.HG.	RESULTANT VAPOR PRESSURE	0.067 IN.HG.


CONVENTIONAL WALL
SHEETROCK
SHEATHING
2½ GALLONS
APPROXIMATE LOCATION OF DEW POINT
APPROX QUANTITY OF CONDENSATE THROUGH VAPOR PENETRATION PER 1,000 SQUARE FEET OF WALL AREA IN 24 HOURS
INSULATING SHEETROCK
SHEATHING
2/3 PINT
APPROXIMATE LOCATION OF DEW POINT
VAPOR BARRIER WALL

Vapor Permeability of Insulating SHEETROCK

A vapor barrier construction should not have a vapor permeability of more than 1.00 perm. Insulating Sheetrock Wallboard meets ASTM requirements for a vapor permeability not exceeding 0.30 perms. for foil-baked Gypsum Wallboard.

1 Perm. = 1 grain per sq. ft. per hour per inch of mercury vapor pressure difference.



SHEETROCK WALLBOARD TRUSSTEEL STUD PARTITION SYSTEM

Finish for non-bearing partitions

DESCRIPTION

The Sheetrock Wallboard Trussteel Stud Partition System is a non-load bearing partition consisting of lightweight, open-web steel studs faced on each flange with a base layer of ⅜", 2' wide by 8' long Baxbord Gypsum Backing Board clipped to the studs and surfaced with a face layer of ⅜" Sheetrock Gypsum Wallboard 16" wide or 4' wide adhesively bonded to the base layer. Either metal or wood floor and ceiling runners may be used, depending upon code regulations or insurance requirements.

PRODUCTS AND ACCESSORIES

⅜" Baxbord; ⅜" Tapered Edge Sheetrock; Perf-A-Tape Joint Cement; Perf-A-Tape Topping; Perf-A-Tape Reinforcing Tape; Perf-A-Bead and Dur-A-Bead Corner Reinforcement; Trussteel Studs Snap-In runner track; shoes (when required); Trus-Lok *TL-1 and TL-Drive-In Starter Clips; Bridjoint* B-1 Clip.

Stud Width	Maximum Stud Spacings	Maximum Partition Height	Snap-In Track and Shoes	Snap-In Track Only
2½"	24" o.c.	10'	4⁹⁄₁₆"	4⁷⁄₁₆"
3¼"	24" o.c.	12'	5⁵⁄₁₆"	5³⁄₁₆"
4"	24" o.c.	14'	6¹⁄₁₆"	5¹⁵⁄₁₆"
6"	24" o.c.	14'	8¹⁄₁₆" (1)	Not Applicable

(1) 6" Snap-In Track not available—For 6" wide studs use 6" standard track and shoes.

FUNCTION AND UTILITY

Fire Resistant—Consists of incombustible steel studs and attachment accessories plus Sheetrock Gypsum Wallboard facings—gypsum wallboard has a flame spread rating of 15 or less.

Fire Resistance Rating—45 minutes with ⅜" Sheetrock Gypsum Wallboard face layer, 1 hour with ½" Sheetrock Firecode 45 face layer (studs spaced 16" o.c.)—nationally recognized fire testing laboratory—name and special details on request. Note: To attain rated assembly, use stud attachment shoes at ceiling only. Where fire rating not required and/or ceiling height variation permits use of studs pre-cut to length, stud shoes may be eliminated.

Sound Transmission Rating—Approx. 45 db. (studs spaced 16" o.c.) Test made by nationally recognized sound testing laboratory.

Open-web stud—The open-web stud design simplifies installation of electrical conduit and plumbing pipes—generally no cutting of stud is required.

Lightweight—The finished partition will weigh approximately 7 lbs. per square foot—less than most other steel stud partitions with ¾" or ⅞" thick facing materials.

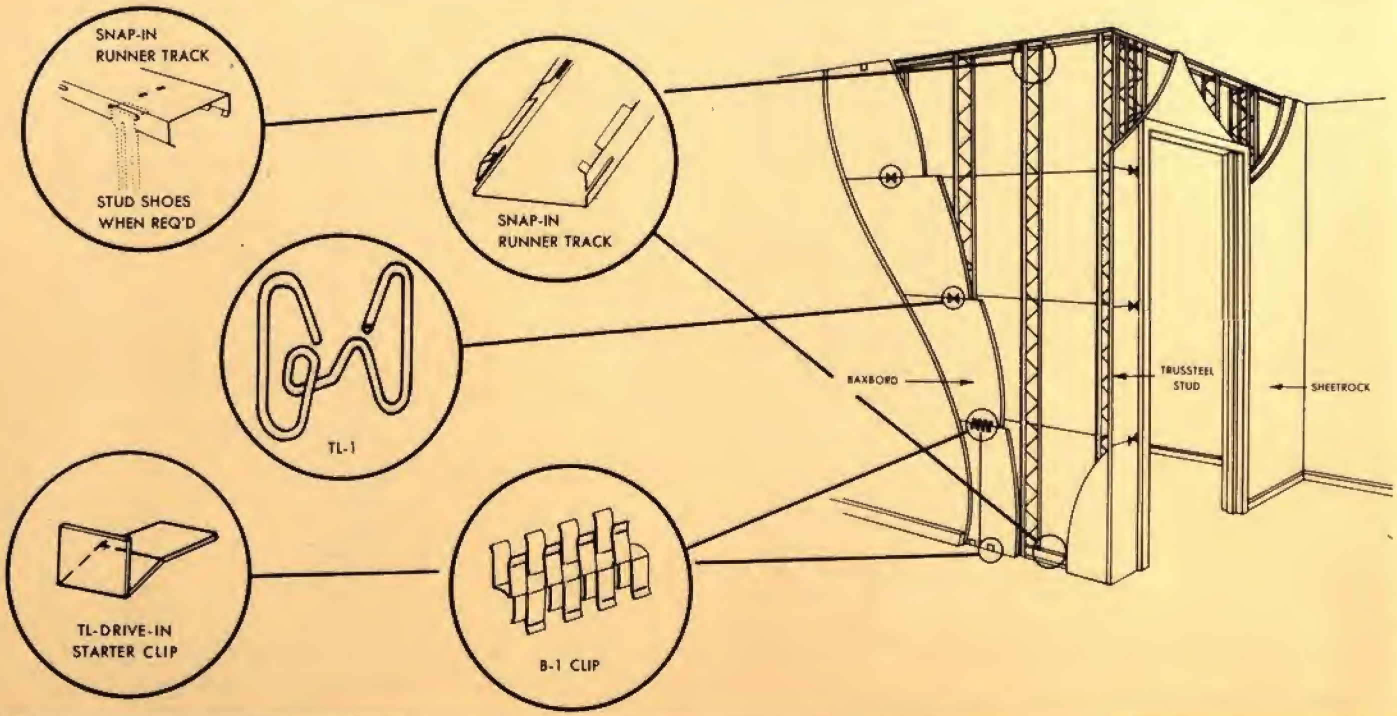
Economical—Because of low material cost, speedy erection, drywall assembly.

Adaptability—May be used in new construction or for modernizing old buildings—for commercial, industrial or residential work. During modernization, the normal work can progress with a minimum of mess and disturbance.

LIMITATIONS OF USE

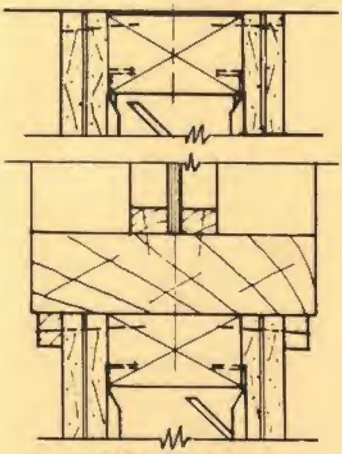
1. The Sheetrock Wallboard Trussteel Stud Partition System was designed for use only as a non-bearing partition.
2. Maximum stud spacing 24" o.c.
3. Should not be used where normally exposed to excessive moisture or humidity.
4. Sheetrock facings shall be adequately protected against wetting or moisture absorption.

*T.M. Reg. U.S. Pat. Off.

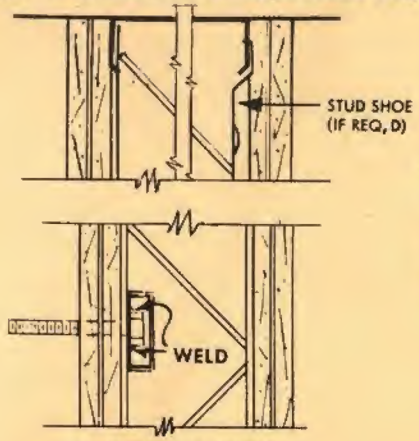


Scale/3" = 1'-0"

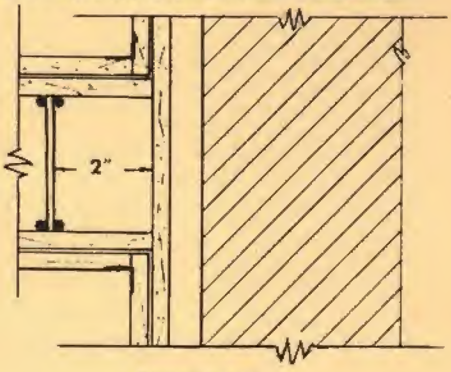
SHEETROCK WALLBOARD TRUSSTEEL STUD PARTITION SYSTEMS—*Continued*



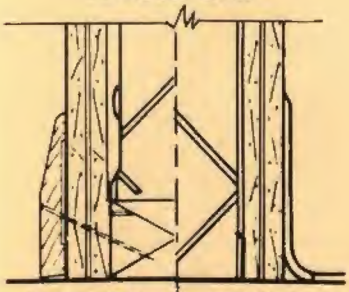
BORROWED LIGHT



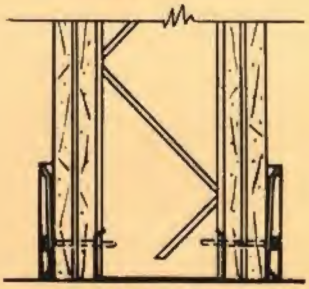
FIXTURE ATTACHMENT



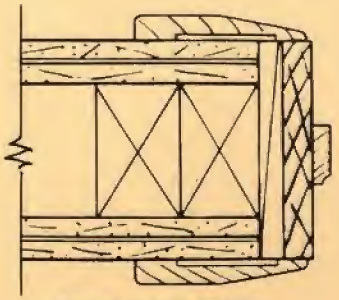
FURRED WALL



WOOD TRIM | RUBBER BASE

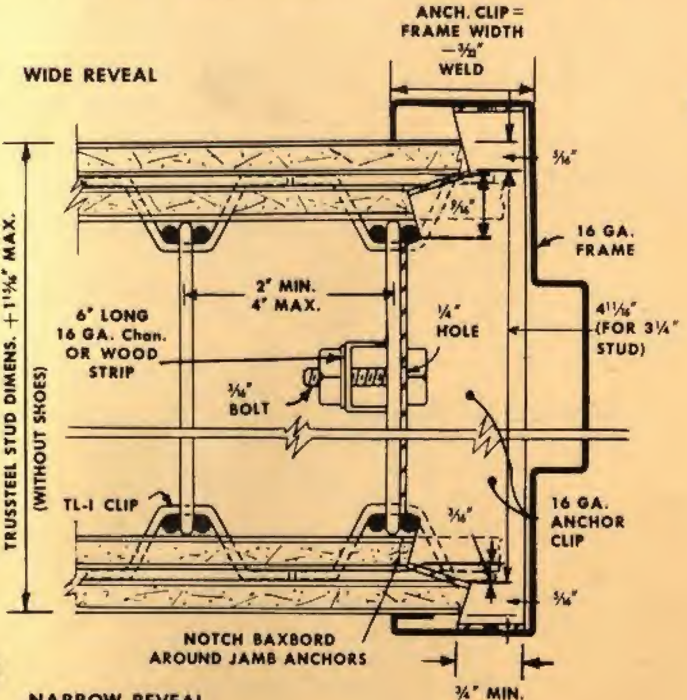


METAL BASE

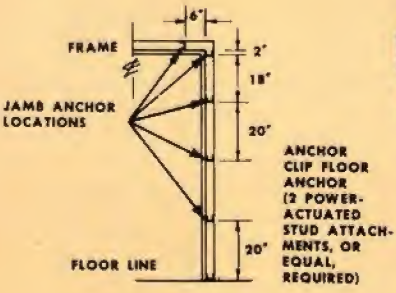


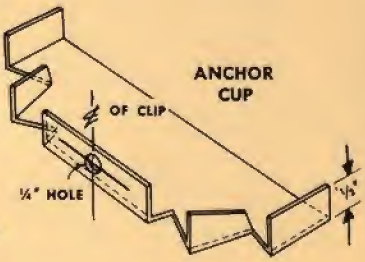
WOOD DOOR FRAME

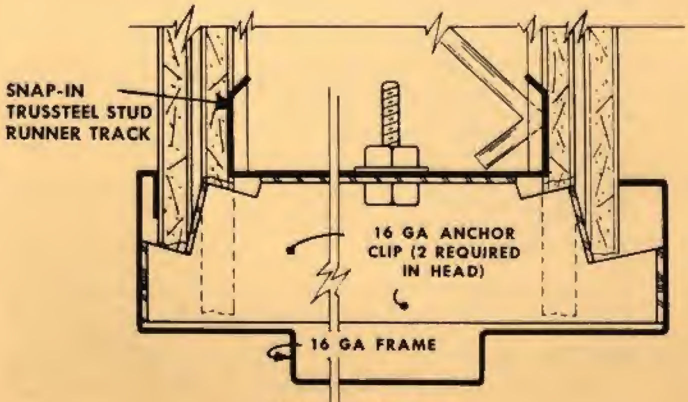
METAL DOOR FRAMES Scale/6" = 1'-0"


ANCH. CLIP = FRAME WIDTH −3/8"
WELD
WIDE REVEAL
5/16"
5/16"
16 GA. FRAME
2" MIN. 4" MAX.
6" LONG 16 GA. Chan. OR WOOD STRIP
1/4" HOLE
4 11/16" (FOR 3 1/4" STUD)
3/8" BOLT
TL-1 CLIP
3/16"
16 GA. ANCHOR CLIP
5/16"
NOTCH BAXBORD AROUND JAMB ANCHORS
3/4" MIN. 1" MAX.
NARROW REVEAL
TRUSSTEEL STUD DIMENS. + 1 1/16" MAX. (WITHOUT SHOES)

DOOR FRAME JAMB


6"
FRAME
JAMB ANCHOR LOCATIONS
2"
18"
20"
20"
ANCHOR CLIP FLOOR ANCHOR (2 POWER-ACTUATED STUD ATTACHMENTS, OR EQUAL, REQUIRED)
FLOOR LINE




SNAP-IN TRUSSTEEL STUD RUNNER TRACK
16 GA ANCHOR CLIP (2 REQUIRED IN HEAD)
16 GA FRAME

DOOR FRAME HEAD

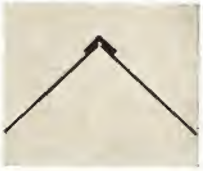
WALLBOARD ACCESSORIES

PERF-A-TAPE JOINT SYSTEMS PRODUCTS

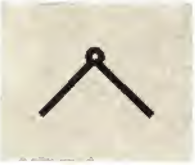
PRODUCT	DISTINGUISHING CHARACTERISTICS	FORM	USES AND LIMITATIONS
PERF-A-TAPE Cement—a specially designed dual-purpose cement for filling joints and embedding the joint reinforcing tape to produce smooth, unbroken wall surfaces and to conceal joints between panels of gypsum wallboards.	Easy mixing—tight bonding—durable—smooth working—edge and check crack resistant cement for concealing joints. Special formula minimizes paint discoloration and discoloration from vapor and gas burner gases in air.	Powder	For use on interior joints, corners, and nail heads in gypsum wallboard. May be applied by hand or with mechanical taping tools. Each cement application must be dry before next is applied. May also be used with PERF-A-TAPE in reinforcing cracks in plaster surfaces. Not designed to join wood or wood fibre products. Requires protection against wetting.
PERF-A-TAPE Topping — smooth, fine texture cement for finishing and concealing joint treatments.	Easy Sanding—long working life—excellent "feathering" qualities. No "built-in" factors to contribute to paint discoloration or to contribute to discoloration from vapors or gases in air from gas burners. Excellent finish when dry for further decorative treatments.	Powder	For fine finishing of joints after reinforcing tape embedment, and for nailhead concealment. Each topping application must be dry before next is applied. Completed joint treatment must be thoroughly dry before proceeding with decoration.
Ready Mixed PERF-A-TAPE Cement is the ideal material for the reinforcement and concealment of joints in gypsum wallboard construction as well as covering nail heads and forming interior and exterior angles.	Smooth working, strong—fine texture—easy to sand—edge and check crack resistant ready to use cement. Requires minimum sanding. Very satisfactory surface over which to apply further decorative treatments. Assures uniform cement mixture throughout job.	Ready to use.	For uniform joint results in interior gypsum wallboard installations. Excellent for embedding tape and smooth finished joints, and nail head spotting on gypsum wallboard surfaces. Excellent when used with PERF-A-TAPE in reinforcing cracks in interior plaster surfaces. Not intended for use on wood or wood fiber products. Protect container from freezing. Protect finished application against wetting. Allow to dry thoroughly before proceeding with decoration.
PERF-A-TAPE reinforcement — a specially designed strong thin, chamfered edge tape reinforcement.	Special cross-fibred paper, of great strength both with and across the grain of the paper—feathered thin at the edges—many small random perforations to allow rapid air-escape during embedding. Highly crack resistant.	Rolls	For use with either PERF-A-TAPE Cement or PERF-A-TAPE Ready Mixed cement. Outstanding performance when used with companion products for joint reinforcement on gypsum wallboards.

METAL ACCESSORIES FOR WALLBOARD APPLICATION

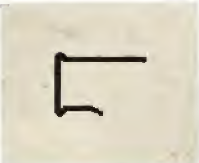
No. 100 PERF-A-BEAD—A metal corner reinforcement formed of electro-galvanized steel with PERF-A-TAPE wings. PERF-A-BEAD is easily applied with PERF-A-TAPE cement and is designed to provide lasting protection in drywall construction. Packaged 200 lineal feet (30 pcs. 6′-8″ or 25 pcs. 8′) per carton. 1,000 lineal feet (150 pcs. 6′-8″ or 125 pcs. 8′ or 100 pcs. 10′) per carton.



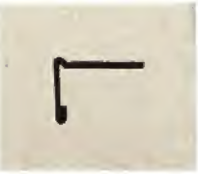
No. 101 DUR-A-BEAD—An excellent guard for external wallboard corners. Made of electro-galvanized steel, it combines lasting protection with ease of application. Easily nailed to framing through gypsum wallboard and concealed with PERF-A-TAPE cement to a smooth, finished corner. Packaged 200 lineal feet (30 pcs. 6′-8″ or 25 pcs. 8′) per carton. 1,000 lineal feet (150 pcs. 6′-8″ or 125 pcs. 8′ or 100 pcs. 10′) per carton.



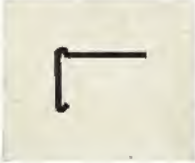
No. 200-A USG METAL TRIM—A strong, channel type steel casing that provides maximum protection and a neat finished edge to gypsum wallboard at window and door jambs. Easily installed by nailing through the channel and wallboard into the framing or jamb. Joints do not have to be mitered but are simply butted together. PERF-A-TAPE is used to complete the installation. For use with ½″ gypsum wallboard. Available in 7′-0″ and 10′-0″ lengths; 50 pcs. per carton.



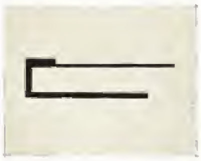
No. 200-B USG METAL TRIM—An angle edge trim whose finished appearance and application is similar to 200-A. By elimination of a back flange, application is simplified. For use with ½″ gypsum wallboard. Available in 7′-0″ and 10′-0″ lengths; 50 pcs. per carton.



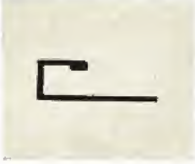
No. 200-C USG METAL TRIM—Requires a slotted jamb for installation. By inserting the open "V" flange into the slot of the jamb this trim is adjustable for use with ⅜″, ½″ and ⅝″ gypsum wallboard. Designed to provide neat, tight fitting joints without precision cutting. Available in 7′-0″ and 10′-0″ lengths; 50 pcs. per carton.



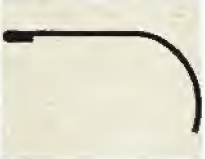
No. 300 PERF-A-TRIM*—An electro-galvanized channel with PERF-A-TAPE flange attached. Designed for use as a casing around door and window openings and ceiling angles. Suitable for single or double layer gypsum wallboard construction. PERF-A-TRIM is embedded with PERF-A-TAPE cement to produce a flush edge reinforcement. Sizes for ⅜″ and ½″ wallboard; available in 7 0″ and 10′-0″ lengths. Packaged 50 pcs. per carton.



No. 400 USG METAL TRIM—An economical metal channel which provides enduring edge protection. Ideal as trim around door and window openings and as molding at ceiling angles. No finishing cement is required. Available in ⅜″ and ½″ sizes; 7′ and 10′ lengths. Packaged 50 pcs. per carton.



No. 500 USG SNAP-ON-TRIM—Is the modern way of trimming doors and windows in drywall construction. An attractive all metal bull nose trim which fits quickly and easily into a kerf cut into the jamb. Standard packages contain enough pre-cut material for two sides of six doors or twelve windows.



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*T.M. Reg. U.S. Pat. Off.

SHEETROCK BRAND ADHESIVE

DESCRIPTION

SHEETROCK Brand Adhesive is specially formulated to adhere SHEETROCK Gypsum Wallboard (Plain and/or Foil Back) to wood framing members in conjunction with supplemental nailing. This adhesive is of a rubber, resin type, plastic in nature and is resistant to moisture, vermin and heat.

Important Note: "Meets Dry-Wall Adhesive Manufacturers Association Specifications."

FUNCTION AND UTILITY

SHEETROCK Brand Adhesive, when properly applied, provides the following added qualities not available with conventional single layer nail-on application:

Reduction of Nail Defects—Nails in surface reduced by 50%. Cushioning effect reduces nail head fracturing of face paper. Incidence of loose board minimized by added area of contact.

Bridges Minor Framing Irregularities

Reduces Impact Sound

Retention of Fire Resistance—Tests show adhesive does not detract from inherent fire resistant qualities of gypsum wallboard.

LIMITATIONS OF USE

1. All surfaces coming in contact with the adhesive should be free of dirt, grease, oil or other foreign material.
2. The adhesive should be stored at approximately 70°F. for 24 hours prior to application to facilitate ease of flow.
3. Adequate ventilation should be provided.
4. Normal precautions (for a flammable material) should be employed regarding proximity to fire, sparks or smoking prior to evaporation of volatile material.
5. The adhesive should be kept in the original unopened container or enclosed in such a manner as to prevent evaporation of volatile materials.
6. Carbon tetrachloride or a petroleum solvent, such as Naptha .or white gasoline, should be used to remove excess adhesive or to clean tools.
7. No adhesive shall be applied more than 15 minutes in advance of installation of the gypsum wallboard.

SPECIFICATIONS

I. SCOPE

NOTE: To Architect—This system augments but does not replace back-blocking. Where adhesive, nail-on method of attachment is to be specified, include the following:

All framing members to which SHEETROCK is to be fastened shall receive a bead of adhesive. This excludes all members not used as a nailing base.

II. GENERAL CONDITIONS

Adequate ventilation shall be provided to allow escape of fumes emitted by volatile materials.

III. MATERIALS

E. Adhesive—shall be SHEETROCK Brand Adhesive.

IV. TOOLS shall be

1. Drywall Adhesive Applicator—Model "A-3"
2. Alemite Loader Pump—Model 7197-L
3. Ames Mastic Meter and Pump

V. ERECTION

NOTE: To Architect—Where adhesive, nail-on method of attachment is to be specified, include the following:

A continuous bead of adhesive of sufficient size to completely cover the face of the nailing members when flattened to a thickness of 1/16", shall be applied immediately prior to erection of the gypsum wallboard. No adhesive shall be applied more than 15 minutes prior to being covered with wallboard. Where two adjoining edges of the wallboard occur on one member, a serpentine bead of adhesive shall be applied.

Each panel of gypsum wallboard will be completely nailed immediately after it comes in contact with the adhesive.

Any excess adhesive on exposed surfaces shall be removed.

Adhesive is not required at inside corners, top or bottom plates, bracing or fire stops, and is not ordinarily used in closets.

NAIL SPECIFICATIONS FOR SHEETROCK* WALLBOARD

GWB-54 ANNULAR RING NAIL

¼" Head, 1¼" Long, .098 Gauge
Approx. 355 per lb. (ASTM-C380-56T)

¼" Head, 1⅜" Long, .098 Gauge
Approx. 315 per lb.

4d COOLER TYPE NAIL

7/32" Flat Head, 1⅜" Long, 14 Gauge
Approx. 488 per lb.

5d COOLER TYPE NAIL

15/64" Flat Head, 1⅝" Long, 13½ Gauge
Approx. 364 per lb.

6d COOLER TYPE NAIL

¼" Flat Head, 1⅞" Long, 13 Gauge
Approx. 275 per lb.

COLORED NAILS

1⅛" Long. Approx. 840 per lb.

SHEETROCK Wallboard		TYPE OF NAIL	LBS. PER 1000 SQ. FT.	SPACING OF NAILS (Standard Single Nailing)
⅝" SHEETROCK		1⅜" Annular Ring Type	4¾	7" on ceilings 8" on walls
½" SHEETROCK		GWB-54 or 5d COOLER	6¼ 6	7" on ceilings 8" on walls
⅜" SHEETROCK		GWB-54 or 4d COOLER	6¼ 4½	7" on ceilings 8" on walls
¼" SHEETROCK	Direct to framework	GWB-54 or 4d COOLER	6¼ 4½	7" on ceilings 8" on walls
	Over existing surfaces	6d COOLER	6¼	7" on ceilings 8" on walls
⅝" FIRECODE 60		6d COOLER	6¼	6" on ceilings
½" SHEETROCK FIRECODE 45		5d COOLER	6¼	7" on walls
⅜" BAXBORD		GWB-54 or 4d COOLER	6¼ 4½	7" on ceilings 8" on walls
Woodgrained SHEETROCK		1⅛" MATCHING COLOR	2	12" on walls
Ranch Pine Panel SHEETROCK		1⅛" MATCHING COLOR	3	12" on walls
Striated Panel SHEETROCK		1⅛" MATCHING COLOR	3	12" on walls
Plain Panel SHEETROCK	Nailed to framework	GWB-54 or 3d COOLER	6¼ 3	12" on walls
	Nailed to 1" nominal thick furring	GWB-54 3d COOLER	6¼ 3	12" walls

*T.M. Reg. U.S. Pat. Off.

SINGLE LAYER SHEETROCK SYSTEM

(Treated Joints)

NOTE: To Architect: For specifications covering PERF-A-TAPE Joint System, see Page 16.

I. SCOPE

Furnish all labor, materials, and equipment to surface all interior walls and ceilings, with gypsum wallboard in accordance with specifications and drawings.

(Back-Blocking)

NOTE: To Architect: When Back-Blocking is to be specified, include the following:

A. All ceiling end joints shall be floated, back-blocked and tapered (except at perimeter of room).

B. All ceiling edge joints shall be back-blocked (except at perimeter of room).

C. All side wall edge joints shall be back-blocked.

D. All side wall end joints shall be floated, back-blocked and tapered.

II. GENERAL CONDITIONS

In cold weather when Back-Blocking is used, the building shall be heated during the application of the gypsum wallboard to maintain a uniform temperature in the range of 45°F. to 70°F., and ventilation shall be provided to eliminate excessive moisture.

All materials as specified above shall be delivered to the job in original unopened containers or bundles, stored in a place protected from exposure to the elements and from damage by tampering, and used in strict accordance with manufacturer's directions.

III. MATERIALS

A. GYPSUM WALLBOARD—shall be SHEETROCK Gypsum Wallboard manufactured by the United States Gypsum Company in the following types and sizes as required:

1. (⅜") (½") (⅝") Tapered Edge (Plain) (Insulating) SHEETROCK 48" wide and in lengths as long as practical to minimize the number of joints.
2. (½") (Plain) (Insulating) SHEETROCK FIRECODE (45) (60), 48" wide and in lengths as long as practical to minimize the number of joints.

NOTE: To Architect: When Back-Blocking is to be specified, include the following:

Backing-blocks shall be ⅜", ½" or ⅝" SHEETROCK Gypsum Wallboard manufactured by United States Gypsum Company. When foil-backed backing-blocks are used, adhesive shall be applied to manila face side of blocks, not to foil side.

Adhesive shall be PERF-A-TAPE Cement (embedding type) manufactured by United States Gypsum Company.

B. NAILS—shall be: *

1. GWB-54 (ASTM-C380-56T) annular ring, ¼" head, 1¼" long, .098 gauge, medium diamond point nail.
2. Annular ring type, ¼" head, 1⅜" long, .098 gauge, medium diamond point.
3. 4d cooler type, $\frac{7}{32}$" flat head, 14 gauge, diamond point nail.
4. 5d cooler type, $\frac{15}{64}$" flat head, 13½ gauge, diamond point nail.
5. 6d cooler type, ¼" flat head, 13 gauge, diamond point nail.

C. CORNER BEAD—shall be USG (#101 DUR-A-BEAD) (#100 PERF-A-BEAD) Corner Reinforcement.

D. METAL TRIM—shall be USG:

1. (⅜") (½") #300 PERF-A-TRIM*
2. (⅜") (½") #400 Metal Trim
3. #500 SNAP-ON TRIM
4. (#200-A) (#200-B) (#200-C) Metal Trim

IV. ERECTION

All ends and edges of all gypsum wallboard shall occur over nailing members, except when joints are at right angles to framing members as in horizontal application or when the end joints are to be back-blocked.

NOTE: To Architect: When Back-Blocking is to be specified, include the following and delete the preceding paragraph:

A. All SHEETROCK Gypsum Wallboard shall be applied with the long edges at right angles to the framing. (Wood backing behind joints between framing supports is not required.)

B. (When floated, back-blocked and tapered, end joints are specified in Section I) gypsum wallboards shall be so positioned that the end joints shall occur midway between supports and these joints shall be backblocked and tapered in accordance with directions published by the United States Gypsum Company.

C. Backing-blocks shall be applied (when specified in Sections I A, B or C) in strict accordance with directions published by the United States Gypsum Company.

(End of note)

SHEETROCK shall be applied first to the ceiling and then to the walls. To minimize end joints, use wallboards of maximum practical lengths. Boards shall be brought into contact, but shall not be forced into place. Where ends or edges abut, they shall be neatly fitted.

End joints shall be staggered. Joints on opposite sides of a partition shall be so arranged as to occur on different studs.

Nails shall be spaced not less than ⅜ inch from edges and ends of wallboard. Nails on all framing members shall be spaced and driven as recommended for specified nailing method. Nails shall not be staggered on adjoining edges or ends.

NOTE to Architect: Specify nailing method.

Wallboard shall be attached to framing supports by:

A. Standard Single Nailing Method.

B. Adhesive—Nail-on method. (Specification on page 11.

C. Double Nailing Method.

(For ⅜" SHEETROCK wallboard, nails shall be 4d cooler type or GWB-54 type) (For ½" SHEETROCK, nails shall be GWB-54 type or 5d cooler type) (For ⅝" SHEETROCK nails shall be 1⅜" annular ring type) (For ⅝" SHEETROCK FIRECODE 60 nails shall be 6d cooler type) (For ½" SHEETROCK FIRECODE 45 nails shall be 5d cooler type)

While the nails are being driven, the wallboard shall be held in firm contact with the underlying support. Nailing should proceed from central portion of the wallboard toward ends and edges. The nails shall be driven home with the heads slightly below the surface of the gypsum wallboard, in a dimple formed by the crowned face of the driving tool striking the last blow. A nail set shall not be used and care shall be taken to avoid breaking the paper face.

When necessary to cut ends, edges, scribe or make cutouts within the field of the wallboard, it shall be done in a workmanlike manner.

(#100 PERF-A-BEAD) (#101 DUR-A-BEAD) shall be applied to all external angles in strict accordance with the manufacturer's directions.

DOUBLE WALL SYSTEM USING SHEETROCK WALLBOARD

(NOTE: To Architect: For Specifications covering PERF-A-TAPE Joint System, see Page 16.)

I. SCOPE

Furnish all labor, material and equipment necessary to surface all interior walls and ceilings with gypsum wallboard in accordance with the specifications and drawings.

Surface all ceilings and walls with a base layer of ⅜" BAXBOARD or ⅜" SHEETROCK (½" SHEETROCK on ceilings where joists are spaced in excess of 16" O.C.), and a face layer of ⅜" SHEETROCK wallboard, adhesively bonded to the base layer.

II. GENERAL CONDITIONS

In cold weather, the building shall be heated during the application of the gypsum wallboard to maintain a uniform temperature in the range of 45°F. to 70°F. and ventilation shall be provided to eliminate excessive moisture.

All materials as specified shall be delivered to the job in original unopened containers or bundles, stored in a place protected from exposure to the elements and from damage by tampering, and used in strict accordance with manufacturer's directions.

III. MATERIALS

A. GYPSUM WALLBOARD—shall be (Plain) (Insulating), (⅜" BAXBOARD, 4'x8', round edge) (⅜" SHEETROCK, 4' wide, lengths from 8' to 14') (½" SHEETROCK, 4' wide, lengths from 8' to 14') (½" BAXBORD, 2' wide, length 8') as manufactured by the United States Gypsum Company.

B. NAILS—shall be

1. GWB-54 (ASTM-C380-56T) annular ring ¼" head, 1¼" long, .098 gauge, medium diamond point.
2. 4d cooler type, 7/32" flat head, 1⅜" long, 14 gauge, diamond point.

C. TOOLS—Notched spreader blade

D. LAMINATING ADHESIVE—shall be USG

1. PERF-A-TAPE Cement (embedding type).

E. CORNER BEAD—shall be USG (#101 DUR-A-BEAD) (#100 PERF-A-BEAD)

Corner Reinforcement.

IV. ERECTION

A. BASE LAYER

CEILING: ⅜" BAXBORD shall be applied with long edges at right angles to framing members. End joints may occur on or between framing members, and shall be positioned to offset face layer joints by at least 10".

WALLS: ⅜" BAXBORD shall be applied with long edges parallel to and centered on framing members.

NOTE: ½" SHEETROCK or ½" BAXBORD shall be applied perpendicular to ceiling joists spaced 24" O.C.

NAIL ON ATTACHMENT

The base layer shall be nailed to framing members with nails spaced 7" on ceilings and 8" on side walls, the nail heads driven flush with surface of the board.

STAPLE ATTACHMENT

The base layer shall be attached to the framing members with power driven staples—16 U.S. standard gauge galvanized wire, flat, ½" wide, 1" long with divergent points. Spacing shall be the same as specified for nail attachment.

B. FACE LAYER

The face layer shall be ⅜" tapered edge SHEETROCK Gypsum Wallboard of sufficient length, up to 14', to span wall and ceiling areas. All joints shall be loosely butted. All joints on face layer shall fall at least 10" from parallel joints in base layer. After cutting the face layer panels to size, adhesive shall be spread over the laminating surfaces of the wallboards with a notched spreader blade. The notched spreader shall be used in a manner to produce an irregular ribbon pattern of adhesive. Adhesive shall extend up to the ends and edges of all board. The face layer shall be temporarily held in place with either nails of sufficient length to penetrate a minimum of ¾" into the nailing member, or by temporary bracing, shoring, or by means of a double headed nail to which a large fiber or wood washer is applied. Temporary nailing or bracing should provide support every 16" to 24". The adhesive shall be mixed to the consistency recommended by the manufacturer.

When proper bond is developed between the two layers, the temporary nails or bracing shall be removed. When this system is used to attain a 1-hour fire rating, the nails in the face layer shall be spaced 8" o.c., shall remain in place, and be finished the same as for single layer construction.

(#101 DUR-A-BEAD) (#100 PERF-A-BEAD) shall be applied to all external angles.

SHEETROCK WALLBOARD AS A BASE FOR CERAMIC OR OTHER TILE

(Adhesive Application)

I. SCOPE

Gypsum wallboard shall be applied as a base for (ceramic) (metal) (plastic) tile on all areas where tile is to be used as a finished surface unless otherwise indicated.

II. GENERAL CONDITIONS

All materials as specified shall be delivered to the job in original unopened containers or bundles, stored in a place protected from exposure to the elements, from damage by tampering, and used in strict accordance with the manufacturer's directions.

Appropriate blocking, headers or supports shall be provided to support tub, other plumbing fixtures and to receive soap dishes, grab bars, towel racks or similar items as may be required.

III. MATERIALS

1. Gypsum wallboard shall be (⅜") (½") (⅝") Taper Edge SHEETROCK Gypsum Wallboard, 4' wide and in lengths as long as practical to eliminate excessive joints, as manufactured by United States Gypsum Company.
2. Materials for treating joints and concealing nailheads shall be PERF-A-TAPE Joint System as manufactured by United States Gypsum Company.
3. Nails shall be (GWB-54) (4d cooler type) (5d cooler type) (6d cooler type) (1⅜" annular ring type).

4. The metal spacer strip shall be fabricated of 16 gauge galvanized steel, with one leg ¾" wide and one leg ⅜" wide bent at a 45° angle.
5. The surface sealer may be either the water resistant adhesive recommended by the manufacturer of the surfacing material spread in a continuous film 1/16" thick over the entire surface of the wallboard or a waterproof sealer such as varnish; either shall be applied after joints are 'treated". Shellac shall not be used. The sealer application shall provide an adequate barrier to the passage of water vapor which may lead to condensation within or on the surface of the backing material or framing members.
6. The adhesive used for application of the surfacing material shall be approved by the manufacturer of the surfacing material for use over gypsum wallboard.
7. The tile installation shall prevent the passage of free water to the backing material.
8. Waterproof receptors, pans or sub-pans shall have an upstanding lip or flange which shall be a minimum of 1" higher than the water dam or threshold contained in the entry way to the shower.

IV. ERECTION

A. FRAMING (see details on page 7)

1. Framing members shall be plumb and true.
2. All framing around tub enclosures and shower stalls shall allow sufficient room so that the inside lip of the tub, prefabricated receptor or hot mopped subpan shall be even with the face of the gypsum wallboard. This may necessitate furring out from the studs the thickness of the SHEETROCK Gypsum Wallboard to be used (⅜", ½", ⅝") less the thickness of the lip, on each wall abutting a tub, receptor or pan.
3. Furring of the proper thickness shall be applied as required parallel to the lip of receptor, pan or tub. The top of furring or if beveled, the start of bevel shall be flush with the upper edge of receptor, pan or tub.
4. Apply a continuous metal spacer strip specified under Section III—Materials (paragraph 4) with the ¾" leg behind the furring or tub rim and the apex of the angle at the top surface of the furring or rim, and the ⅜" leg protruding away from the stud face. (Note: If a metal spacer strip is not used the wood furring must be beveled as shown in Details, page 7).
5. (a) For walls to be surfaced with ceramic tiles over ¼" thick: When ⅜" SHEETROCK Gypsum Wallboard is to be used on studs spaced 16" o.c. or ½" or ⅝" SHEETROCK Gypsum Wallboard on studs spaced more than 16" o.c., suitable blocking shall be installed between all studs: one row of blocking located approximately 1" above the top of the tub or receptor and another row at the mid point between the tub and ceiling.
   (b) Blocking is not required for ⅜" SHEETROCK Gypsum Wallboard on studs spaced 12" o.c. or less, or for ½" or ⅝" gypsum wallboard on studs spaced 16" o.c. or less.
6. Appropriate blocking, headers or supports shall be provided to support tub, other plumbing fixtures, and to receive soap dishes, grab bars, towel racks and similar items as may be required.

B. APPLICATION

1. Shower pans, receptors or tubs shall be installed prior to the erection of the gypsum wallboard. They shall be properly furred away from the framing members as specified in Section A (Framing), and installed so that the inside surface of the lip or upstanding leg of the receptor or pan shall be in alignment with the surface of the gypsum wallboard.
2. Gypsum Wallboard
   (a) ⅜", ½", or ⅝" SHEETROCK Gypsum Wallboard shall be applied horizontally with the factory edge (paper bound) abutting the top edge of the metal spacer strip or bevelled furring, which shall allow a minimum of a ¼" space between the lip of the receptor, tub or subpan and the gypsum wallboard.
   (b) The SHEETROCK shall be nailed in the conventional manner. Exception: Where ceramic tiles over ¼" thick are to be used as a surfacing material, nails shall be spaced 4" o.c. maximum.
   (c) All joints between adjacent pieces of wallboard, including those at all angle intersections, shall be "treated".
3. Application of surfacing material
   (a) Prior to the erection of surfacing materials, a waterproof sealer shall be applied to the entire surface of the gypsum wallboard, treated joints and angles. When the adhesive is used as a sealer, it shall be applied as a separate operation, independent of the application used to adhere the surfacing material. Seal all edges of cut-outs made in the gypsum wallboard for pipes, fixtures, etc.
   (b) Prior to the erection of surfacing materials, all openings around pipes, fixtures, etc., shall be caulked flush with waterproof, non-hardening caulking compound.
   (c) The surfacing material shall then be applied down to the top edge of the shower floor surfacing material, return or tub lip and installed so as to overlap the lip or return of the tub or receptor.
   (d) The surfacing material shall be applied so as to completely cover the following areas:
      (1) over tubs without shower heads—6" above the rim of the tub.
      (2) over tubs where showers occur—a minimum of 5 feet above the rim or 6" above the height of the shower head, whichever is higher.
      (3) shower stalls—a minimum of 6 feet above the shower dam or 6" above the shower head, whichever is higher.
      (4) all jambs in shower stall shall be covered to a like height.
      (5) all areas extending beyond the face of the tub shall be covered a minimum of 4" from the required height to the finished floor of the bathroom (below rim of tub). Areas beyond an exterior corner are excluded.

(e) Where plastic finished wall panels are used as a surfacing material, the following precautions shall be taken:

  (1) Only the type and shape of mouldings recommended by the manufacturer of the surfacing material shall be used. All interior and exterior angles shall be treated with mouldings containing a flange projecting behind the surfacing material on each leg of the angle. Only recommended tub mouldings shall be used at the base where the surfacing materials abut the tub, shower floor or curb. Such mouldings shall be set in caulking compound.

  (2) A bead of caulking compound shall be applied at the angle formed by the gypsum wallboard backing and the moulding used around the top edge of the surfacing material to prevent water entry behind the moulding.

(f) Where other types of surfacing materials are used, the following precautions shall be taken:

  (1) Grout all joints completely and continuously to prevent water penetration.

  (2) Nonsetting caulking compound shall be applied between the wall surfacing materials and the shower floor surfacing or tub rim.

  (3) The angle between the tub edge and the surfacing material shall likewise be caulked.

SHEETROCK WALLBOARD TRUSSTEEL STUD PARTITION SYSTEM

(NOTE: To Architect: For treated joints refer to specifications covering PERF-A-TAPE Joint System, Page 16.)

(NOTE: To Architect: Stud attachment shoes may be eliminated where fire rating is not required and/or ceiling height-variation permits use of studs pre-cut to length.)

I. SCOPE

Furnish all labor, materials and equipment to erect all interior non-bearing partitions and surface with gypsum wallboard in accordance with specifications and drawings.

II. GENERAL CONDITIONS

In cold weather the building shall be heated during the lamination of the gypsum wallboard face layer and joint treatment to maintain a uniform temperature in the range of 45°F. to 70°F., and ventilation shall be provided to eliminate excessive moisture.

All materials as specified above shall be delivered to the job in original unopened containers or bundles, stored in a place protected from exposure to the elements and from damage by tampering, and used in strict accordance with manufacturer's directions.

III. MATERIALS

A. STUDS—(2½") (3¼") (4") (6") shall be TRUSSTEEL Studs as manufactured by the United States Gypsum Company.

B. METAL FLOOR AND CEILING RUNNERS—shall be TRUSSTEEL Stud Snap-In Runner Track for 2½", 3¼" and 4" Studs, for 6" stud width, metal runner shall be TRUSSTEEL Stud Standard Runner Track as manufactured by the United States Gypsum Company.

C. WOOD FLOOR AND CEILING RUNNERS shall be specified in details.

D. STUD ATTACHMENT SHOES—shall be TRUSSTEEL Stud attachment shoes as manufactured by the United States Gypsum Company.

E. POINTED TRUSSTEEL Stud Attachment Shoes, as manufactured by the United States Gypsum Company, shall be used with wood runners.

F. BASEBOARD—shall be ⅜" BAXBORD Gypsum Backing Board as manufactured by the United States Gypsum Company.

G. FACE LAYER—shall be (⅜" tapered edge SHEETROCK Gypsum Wallboard) (⅜" Panel SHEETROCK Gypsum Wallboard—maximum length 10') as manufactured by the United States Gypsum Company.

H. ATTACHMENT CLIPS—shall be TRUS-LOK TL-1 field Clips, TL-Drive-in Starter clips as supplied by the United States Gypsum Company.

I. END JOINT CLIPS—shall be BRIDJOINT B-1 Clips as supplied by the United States Gypsum Company.

J. ADHESIVE—shall be (PERF-A-TAPE Cement—embedding type) as manufactured by the United States Gypsum Company or as may otherwise be recommended by United States Gypsum Company.

K. EXTERIOR CORNER REINFORCEMENT—shall be (#100 PERF-A-BEAD) (#101 DUR-A-BEAD) Corner Reinforcement as manufactured by the United States Gypsum Company.

IV. ERECTION

Snap-In Metal Runner Track shall be aligned accurately and securely anchored with suitable fastners (equivalent power driven studs) spaced not more than 24" on centers.

Studs shall be spaced (16") (24") o.c. (each stud shall be snapped-in place vertically in notches provided in Snap-In Runner Track at top and bottom.) (Each stud shall be snapped-in place vertically in notches provided in Snap-In Runner Track, and each stud secured to runner track by two attachment shoes at top only.) (Each attachment shoe shall be crimped twice to engage the flanges of studs.) Studs shall be located approximately 2" from all door frame jambs, abutting partitions, or other construction. Studs supporting steel door frames shall be secured to ceiling runner track with stud shoes. With steel door frames, an additional anchorage stud shall be required at each jamb. Anchor studs adjacent to door frame to the jamb anchors as per details. All corners shall be framed with one stud approximately 2" from the external corner and one stud approximately 2" from the internal angle of each of the meeting partitions.

Base Layer—BAXBORD shall be applied starting at the floor level and working upwards with the long (8') dimension parallel to the floor. The BAXBORD shall be held in place with TL-Drive-In Starter clips at the floor and ceiling runners spaced at approximately every 24". TL-1 Clips shall be positioned at each intersection of the edge of the BAXBORD and stud cord.

BAXBORD end joints shall occur between studs, staggered in adjacent courses and held in alignment at the end and edge intersections with B-1 clips.

Face Layer—The facing units shall be cut to full floor to ceiling height lengths less ¼". Full width boards shall be used wherever possible. Boards with broken or damaged edges shall not be used.

Adhesive shall be mixed in accordance with the manufacturer's directions and shall be applied to the back of the facing unit in ribbons of cement spaced not more than 7" apart and approximately 1½" to 2" from each edge, end and cut-out edges for partition openings. The ribbons of cement shall be approximately ½" wide at the base and ⅝" high.

Immediately after applying the cement, boards shall be placed vertically against the BAXBORD base layer and temporarily held in position by sufficient nails, bracing, or staples (power driven, 16 U.S. Standard gauge galvanized wire, flat, ½" wide, ¾" long with divergent points) until the adhesive bonds the two units securely together. Succeeding units shall be likewise positioned with vertical edges abutting and surface flush with the ones previously erected. As required, TL-DRIVE-IN STARTER clips shall be used at the ceiling line to temporarily hold the face layer in place until properly adhered.

Specifications covering the use of wood floor and ceiling runners are essentially the same as above surfaces except:

A. Pointed TRUSSTEEL Stud shoe clips are used and shall be secured to the wood floor or ceiling runners by driving the points into the wood.

B. The TL-DRIVE-IN STARTER clip is not required. BAXBORD shall be secured in position by nailing through the BAXBORD into the wood floor and ceiling runners. The facing unit may be held in position by nails driven through both the facing unit and BAXBORD backing board, and into the wood ceiling runner.

ARCHITECT SPECIFICATIONS FOR PERF-A-TAPE JOINT SYSTEM PRODUCTS

I. SCOPE

Unless otherwise indicated, all walls, partitions and ceilings are included. Furnish all labor and material necessary to reinforce and conceal all joints between gypsum wallboard panels in accordance with specifications and drawings. (If DUR-A-BEAD metal corner reinforcing is specified) furnish all labor and material necessary to properly conceal the metal flanges of DUR-A-BEAD. (If PERF-A-BEAD corner reinforcing is to be specified) furnish all labor, PERF-A-BEAD Corner reinforcement and cement required to finish all external vertical corners and other corners as may be shown on drawings.

(If PERF-A-TRIM is specified) Furnish all labor and material to properly bond and conceal exposed flanges of PERF-A-TRIM as specified or shown on drawings.

II. GENERAL CONDITIONS

Heat and Ventilation—In cold weather the building shall be heated well in advance of and during the application of the gypsum wallboard, to maintain a uniform temperature in the range of 55° F. to 70° F., and ventilation shall be provided to eliminate excessive moisture. When required, heat is to be furnished by (Insert Contractor s Name Here) Drafts are to be avoided during application but adequate ventilation is to be provided when application is completed. In glazed buildings this shall be accomplished by keeping windows open approximately two inches top and bottom (or side pivoted windows approximately four inches) to provide air circulation. In enclosed areas or buildings lacking in natural ventilation, temporary circulators shall be used.

MATERIALS

General: All materials as specified above shall be the products of the United States Gypsum Company, delivered to the job in original unopened containers, stored in a place protected from exposure to the elements and from damage by tampering, and used in strict accordance with manufacturer's directions.

Reinforcing Tape:

PERF-A-TAPE

Cement:

PERF-A-TAPE Joint Cement—for embedding. PERF-A-TAPE Topping—for fill and finishing. (If PERF-A-BEAD is to be used, specify as follows) PERF-A-BEAD Corner Reinforcing.

APPLICATION

PERF-A-TAPE Cement and PERF-A-TAPE Topping shall be mixed in accordance with manufacturer's recommendations.

Using a suitable tool or machine, a thin uniform layer of PERF-A-TAPE cement (embedding type), approximately 3" wide, shall be applied over the joint to be reinforced. The tape shall then be centered over the joint and seated into the cement, leaving sufficient cement adhesive under the tape to provide proper bond.

Wall and ceiling angles and inside vertical corner angles shall be similarly reinforced with the reinforcing tape folded to conform to the adjoining surfaces and to form a straight true angle.

All joints shall be allowed to dry thoroughly (minimum of 24 hours) between each application of cement.

The tape shall be covered with topping, spread evenly over and slightly beyond the tapered edge area of the board and feathered at the edges. After the previous coat is dry it shall be covered with a second coat of topping with a smooth, uniform slight crown over the joint and the edge feathered slightly beyond the preceding coat. All dimples at nail heads shall receive three coats of joint cement, or topping, applied as each coat is applied to the joints.

(If DUR-A-BEAD corner reinforcing is used). Flanges of all DUR-A-BEAD metal corner reinforcing shall be concealed by at least two coats of cement. The first coat shall be PERF-A-TAPE Cement (embedding type). Second coat may be either PERF-A-TAPE Cement or PERF-A-TAPE topping. When completed, the cement shall extend approximately 8" to 10" on either side of the exposed metal nosing.

(If PERF-A-BEAD corner reinforcing is used.) PERF-A-BEAD shall be furnished, applied and concealed in accordance with the manufacturer's directions.

(If PERF-A-TRIM is used). PERF-A-TRIM shall be finished in accordance with the manufacturer's directions.

All coats shall be sanded as necessary after each application of joint cement or topping has dried. The final coat and subsequent sanding shall leave all gypsum wallboard and treated areas uniformly smooth and ready to receive decoration.

A.I.A. File 21-A

TECHNICAL INFORMATION

USG®
GYPSUM PLASTERS

AND FINISHING LIMES

UNITED STATES GYPSUM

1959

A.I.A. File 21-A

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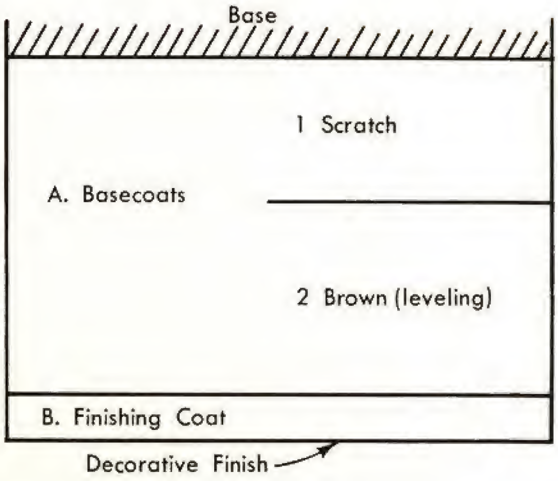
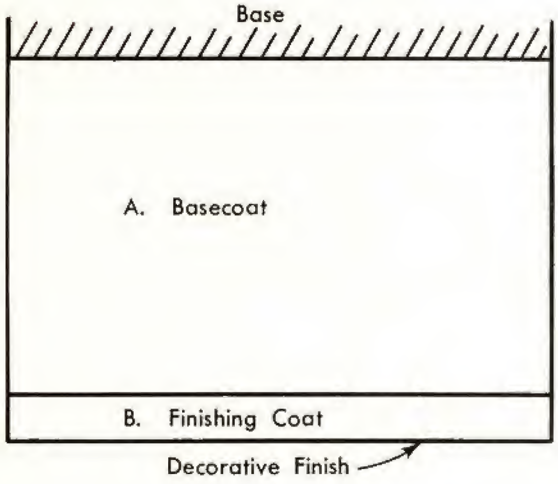
BASECOAT PLASTERS

THREE COAT PLASTER



In three coat work, the first (scratch) coat is raked to provide tooth for the second (brown) coat. · In two coat work on gypsum lath and masonry the basecoat may be applied by scratching in and immediately doubling back to fill out to grounds. In all cases the basecoat should be left level under the rod, but rough to receive the finish coat.

TWO COAT PLASTER



Basecoat plaster is applied directly to the plaster base (usually lath or unit masonry) in sufficient thickness to hide the framework of the structure in the contour angles, curves or plane surfaces of the architectural design, and to provide a sound, durable base, with fire resistance as required, for the finish coat and subsequent decoration.

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A. BASECOATS

Correct selection and application of U. S. Gypsum basecoat plasters over a properly prepared standard plaster base such as PYROBAR* gypsum tile, clay tile, concrete masonry units, ROCKLATH* plaster base, metal lath, or monolithic concrete, assures good basecoat plaster adhesion.
They are formulated to set and dry, under recommended job conditions as covered in the specifications, in sufficient time to prevent construction delay.

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*T.M. Reg. U.S. Pat. Off.

GYPSUM PLASTER For Basecoats

DESCRIPTION

The base of all gypsum plasters is gypsum rock, or hydrous calcium sulfate, which has a water content of about 20 per cent in chemical combination. During manufacture ¾ of this water is removed. When water is added at the job, the material crystallizes (sets), reverting to its original chemical form. In RED TOP* Gypsum Plasters, other materials are added in small amounts to control working qualities and setting time. The character and proportions of these additives vary according to the type of intended use and the climatic conditions of the area in which the plaster will be used.

U. S. Gypsum basecoat plasters can be used on gypsum and metal lath; gypsum, clay, or concrete tile; concrete or cinder blocks; monolithic concrete; brick, or other approved plaster bases. When the proper plaster for the plaster base is applied correctly, it will bond firmly to the base to provide a sound foundation for the finish coat.

FUNCTION AND UTILITY

In selection of a basecoat plaster, several factors must be considered: Location; use to which the plastered surface will be put; fire ratings required; sound insulation properties desired; probable abuse of the plastered surface, etc. The principal problems to be considered are outlined below.

Fire Protection Gypsum base plasters, properly proportioned with approved aggregates, provide excellent fire protection. (See page 7 for technical data on fire ratings.) For maximum fire resistance in ceiling construction, use RED TOP gypsum plaster with lightweight aggregate over lathing base.

Strength (See page 7.) Strength varies with the type and quantity of aggregate used, the thickness of the basecoat, and the integrity of the plaster base over which the basecoat plaster is applied.

Sound Insulation. Base plasters add mass to masonry units or specially designed lathing systems, providing increased sound transmission losses for these assemblies. Basecoat plasters with sand aggregate provide better sound insulation than those with lightweight aggregate, due to the greater weight of the sand.

Abuse For surfaces which must endure abuse (school corridors, etc.), wood fiber plaster, or RED TOP gypsum plaster with sand aggregate, will provide the best results.

PLASTER AGGREGATES For Basecoats

SAND

Sand is the most commonly used plaster aggregate. It is relatively inexpensive and readily available in most locations. Three important factors must be considered when sand is used:

1. Sand must comply with the requirements of ASTM Designation C35 for graduation.
2. Sand must be clean. Foreign matter weakens the plaster, reduces its hardness, and may lengthen or quicken the setting time.
3. Sand must be correctly proportioned with gypsum cement plaster as shown in the table below. Proper proportioning is readily accomplished by use of a standard shovel size. A No. 2 shovel, for example, holds approximately 15 pounds of damp, loose sand. For 1:2 mix, 13 shovelfuls of sand would be required with each 100-pound bag of plaster, 20 shovels for a 1:3 mix.

LIGHTWEIGHT AGGREGATES

Lightweight aggregates are often used because of their ease of handling in inclement weather and cold weather, reduced dead load, and excellent fire protection qualities.

Job mixed lightweight aggregate plasters have certain limitations. Their compressive and tensile strengths with proportioning of 100 lbs. of gypsum to 2 and 3 cubic feet of aggregate are generally lower than strengths obtained with sanded plaster. (See technical data, page 7). Gypsum-gauged lime "White-coat" trowelled finish, being hard and brittle, is not compatible with low strength basecoats and cracking may result.

Mill mixed perlited plaster, such as STRUCTO-LITE, provides all the advantages of lightweight aggregate plaster, but is manufactured and formulated under laboratory control to provide desirable compressive strength, control of aggregate through quarrying selected ore and expanding and processing to exacting standards of hardness and gradation and proportioning to attain adequate strength, and proper set and suction, enabling the architect to obtain satisfactory job results.

Recommended finish coats for STRUCTO-LITE include, first:
Sand float finishes
and second:
Lime putty coats with the addition of approximately 25 lbs. of No. 1 white Silica Sand or approximately ½ cu. ft. of perlite fines per 100 lbs. of gauging plaster, which will trowel to a smooth surface.

Under no consideration should Keene's Cement or STRUCTO-GAUGE finishes be used over STRUCTO-LITE.

Lightweight aggregate gypsum plasters generally have less favorable sound transmission loss ratings than sand aggregate gypsum plaster.

USE OF AGGREGATES WITH GYPSUM CEMENT PLASTER—Maximum Recommended Proportions

Plastering Base	Number of Coats	Plaster to Sand By Weight	Vermiculite, Perlite Weight of Plaster to Cubic Feet of Aggregate
Gypsum Lath	Three coats:		
	Scratch coat	1:2	100:2
	Brown coat	1:3	100:3
	Two coats Basecoat	1:2½	100:2½
Metal Lath	Three coats:		
	Scratch coat	1:2	100:2
	Brown coat	1:3	100:3
Unit Masonry: Gypsum Tile Clay Tile Brick Cement Block	Three coats:		
	Scratch coat	1:3	100:3
	Brown coat	1:3	100:3
	Two coats: Basecoat	1:3	100:3

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*T.M. Reg. U.S. Pat. Off.

RED TOP CEMENT PLASTER

RED TOP Cement Plaster is a neat gypsum basecoat plaster to which water and an aggregate are added on the job. Complies with ASTM Designation C28 for neat gypsum plaster and Federal Specification SS-P-402, Type N. Used for both first (scratch) and second (brown) coats.

Available in following formulations: Regular—For use with sand aggregate, hand application. LW—For use with lightweight aggregates, hand application. Machine Application—for sand or lightweight aggregates.

Function and Utility

Architects and builders specify RED TOP Cement Plaster:

1. To meet specific published fire ratings as established by local fire codes or insurance rating bureaus;
2. To provide mass for better sound insulation properties;
3. To provide a harder, stronger basecoat;
4. For real economy. The neat gypsum used in RED TOP Cement Plaster is inexpensive. It is mixed with economical aggregate which increases its bulk and its coverage. Highly plastic, it is easily and quickly applied.
5. To take advantage of the several special formulations developed to insure best quality results when used with the various types of aggregates and whether applied by hand or with machine.

RED TOP WOOD FIBER PLASTER

RED TOP Wood Fiber plaster is a gypsum basecoat plaster which contains selected wood fiber, finely shredded. It requires the addition of only water on the job.

RED TOP Wood Fiber Plaster complies with ASTM Designation C28, gypsum wood-fibered plaster, and Federal Specification SS-p-402, Type W.

By comparison with plaster sanded 1:3, RED TOP Wood Fiber plaster has approximately three times greater compressive strength, two and one half times greater impact strength, and 50 per cent greater hardness. Offers far greater resistance to cracking.

RED TOP Wood Fiber Plaster has greater fire resistance than sanded plaster basecoats at equal thickness. See data on page 6.

It is ready for use—needs only water. Eliminates risk of improper proportioning of plaster and aggregate. Over *unit* masonry, because of excessive suction, *up* to one part of sand *may* be added.

A wood fiber basecoat plaster job costs approximately 10 to 15 per cent more than the same job done with RED TOP Cement Plaster sanded on site.

Limitations of Use

1. RED TOP Cement Plaster must have aggregate added strictly according to specifications. Use of too much aggregate drastically decreases its strength.

2. Where sound transmission is the prime consideration in partition or ceiling assemblies use *sand* aggregate only, since mass is a controlling factor.

3. BONDCRETE should be used on interior concrete surfaces providing the surface is sufficiently rough to provide a proper bond. Maximum thickness of BONDCRETE and basecoat shall not exceed 3/8″ on ceilings or 5/8″ on walls. If additional thickness is required, self-furring metal lath should be secured to the concrete surfaces. Under no circumstances should RED TOP Cement Plaster or Wood Fiber plaster be applied directly to monolithic concrete.

4. Gypsum Plasters should not be used where in contact with excessive water or moisture conditions. In such instances use portland cement-lime plaster.

Gypsum Plasters may be applied to ceilings or open porches, car-ports, soffits of eaves, walkways, and canopies, but only when these surfaces are horizontal or inclined away from the structure. All such plaster surfaces shall be protected from direct exposure to

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*T.M. Reg. U.S. Pat. Off.

RED TOP STRUCTO-LITE* PLASTER

RED TOP STRUCTO-LITE plaster is a high quality basecoat plaster prepared at the mill by a careful proportioning of expanded perlite and gypsum plaster. For use on the job it requires only the addition of water.

STRUCTO-LITE complies with ASTM Designation C28 for gypsum ready-mixed plaster.

The proper proportioning of gypsum cement plaster with a well graded, controlled-density perlite aggregate, and the establishment of a mill-controlled set, help to assure uniform strength in the plaster slab.

Because the perlite in STRUCTO-LITE conforms with exacting specifications for density, strength, and gradation, and is thoroughly mixed with the cement plaster at the mill, the plaster coat is of uniform hardness throughout.

While many fire-tests have been completed on partition and ceiling assemblies, additional tests are scheduled, and until these are complete, "STRUCTO-LITE" cannot be specified to meet all code and insurance rating requirements. (See technical data on Page six.)

The "k" factor of STRUCTO-LITE plaster is approximately 1.4, or about three times that of a gypsum-sand basecoat.

Available in several special formulations:

Regular STRUCTO-LITE
Masonry STRUCTO-LITE—for use on high suction unit masonry bases only.
STRUCTO-LITE for Machine Application.

BONDCRETE* PLASTER

RED TOP BONDCRETE is a gypsum basecoat plaster specially formulated to bond firmly with rough interior monolithic concrete surfaces. It is factory-mixed, and on the job requires only the addition of water to make it ready for use. Complies with ASTM Specification C-28.

BONDCRETE provides a base to receive a brown or leveling coat of RED TOP Cement plaster or Wood Fiber Plaster where three coats are to be used.

If a leveling coat is not required, the finish plaster can be applied directly to the BONDCRETE with excellent results.

BONDCRETE has approximately the same coefficient of expansion as concrete.

BONDCRETE adheres to properly prepared concrete surfaces. For proper conditioning of surfaces, see Specifications, Surface Preparation, page 10. Correct preparation is important.

The low cost of BONDCRETE makes it an economical bonding coat for application directly to rough concrete surfaces.

rain and suitable drips and casings provided along edge exposure.

PAINTING OF SURFACE ?

5. Plaster application on masonry walls or concrete, that have been coated with bituminous compounds, is not recommended.

Because of the possiblity of condensation or water seepage, plastering directly to interior side of solid exterior masonry walls above grade or exterior foundation walls below grade is not recommended. In each instance they shall be furred and lathed before plastering. Sub-grade construction water-proofed on the exterior side.

6. Radiant heat plaster slabs shall not have surface temperatures exceeding 115° Fahrenheit. Check conductivity of the plaster and aggregate. The thermal conductivity of gypsum-sand plaster is approximately three times that of STRUCTO-LITE.

7. Basecoat plasters must not abut or die against the hollow metal door frame return, unless provision is made to dampen the trim return vibration by grouting, special anchors, or both. Lath and plaster should recess into or behind metal frames or base.

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*T.M. Reg. U.S. Pat. Off.

PORTLAND CEMENT-LIME PLASTER AND EXTERIOR STUCCO BASECOAT

Portland cement-lime plaster is prepared on the job from Portland cement, lime, sand, and water, in the following proportions: For the scratch coat 1 bag of Portland cement, 2 bags of MORTASEAL* lime, 7½ cubic feet of sand, and (over metal lath or stucco mesh) 2 lb fiber. For the brown coat, 1 bag Portland cement, 2 bags MORTASEAL, and 9 cubic feet of sand. It is used for application directly to concrete block, clay tile, or metal lath as a base for ceramic tile, or in areas subject to high-moisture conditions.

It is the basecoat for ORIENTAL* Exterior (colored) finish. It is used for the scratch (first) coat and brown (second) coat over cement block or clay tile, or over sheathing to which STUCCO MESH or self-furring metal lath has been properly applied.

Limitations of Use

1. Each coat requires curing with water after set.

2. Must not be applied directly to smooth, dense surfaces, gypsum lath, or gypsum block. Metal lath must be secured to such surfaces before plaster is applied.

3. Provision is needed for relief of shrinkage in setting and drying at points where ceiling and wall meet, or where beams, columns, and fixtures pass through the plaster. Expansion joints should be provided to avoid excessive continuous areas.

FINISHING COAT PLASTERS

Description

Finish coat plaster provides the base for wall or ceiling decoration. It is usually applied over a gypsum plaster basecoat, and to a thickness of 1/16 to 1/8 inch.

Each of the several available types of finish coat has individual characteristics to meet special requirements. These types are generally classified according to the principal cementitious ingredient.

Types

1. Gypsum-gauged-lime, commonly known as "white coat," for a smooth, white trowel finish. It consists of lime properly prepared to a smooth putty and mixed with gypsum gauging plaster. With the addition of sand, it is adaptable for sand float finishes. Structo-gauge is a recent development in gauging plaster which produces high compressive strengths. Lime putty, gauged with Structo-gauge produces economically an extremely hard smooth trowel finish.

For a good white coat, the lime must be highly plastic and properly hydrated. Gauging plaster must be correctly proportioned to lime putty, and ingredients must be thoroughly blended. Careful application and sufficient trowelling during and after set are essential to produce a smooth, glossy surface.

Over lightweight aggregate basecoats, the addition of up to 25# of fine Silica Sand, or up to ½ cu. ft. of perlite fines, per 100# of gauging plaster is recommended, to improve working qualities and to help minimize map-cracking.

2. Keene's Lime: for a hard, smooth, white trowel finish. With the addition of sand, it is adaptable for sand float finishes. Also available mill-mixed and colored under ORIENTAL Interior Finish brand.

3. Gypsum, for trowel (smooth) or sand float prepared finishes.

4. Acoustical Plaster, for sound absorption. Available in SABINITE*, AUDICOTE†, and HI-LITE† types. See page 9.

Dolomitic Lime Hydration

The United States Gypsum Company was the leader in solution of the dolomitic lime hydration problem with the development of IVORY* Double Hydrated finishing lime. This is a "fully" or "pressure" hydrated (less than 8 per cent unhydrated) Ohio dolomitic finishing lime.

ASTM Specification C206 for special finishing lime, and proposed amendments to Federal specifications, cover fully (92 per cent) hydrated limes. The National Lime Association has published its own specifications. This type of finishing lime is required by American Standards Association Specifications for Gypsum Plastering, A42.1-1955.

All high calcium hydrated limes, properly soaked, comply with these requirements, as do high calcium quicklimes, properly slaked.

TECHNICAL DATA—FINISH PLASTERS

	GAUGING PLASTER TO LIME	STRUCTO-GAUGE TO LIME		QUICK TROWELING KEENE'S TO LIME		GYPSUM TROWEL FINISH	GYPSUM FLOAT FINISH	ORIENTAL FINISH
Mix by weight of dry materials:	1:2	1:2 Medium Hard	1:1 Hard	2:1 Medium Hard	4:1 Hard	NEAT	NEAT	NEAT
Color	White	White	White	White	White	White	White or Gray	7 Colors
Finish Texture	Smooth	Smooth	Smooth	Smooth	Smooth	Smooth	Float	Float
Hardness in Kilograms (†)	34	56	108	50	70	55	(‡)	(‡)
Workability	1	1	2	4	7	3	6	5
Cost Factor Labor & Mat'l.	100	125	150	170	180	125	125	160

(†) Kilograms required to force a 10mm ball .01" into plaster face.

(‡) These are hard finishes but the aggregate in the surface does not permit an indication with this test.

*T.M. Reg. U.S. Pat. Off.

FIRE TEST DATA (All tests made at nationally recognized fire testing laboratories)

CONSTRUCTION	PANEL TYPE			RATING
	TYPE BASE	PLASTER & AGGREGATE (H)	THICKNESS	
		PARTITIONS		
Wood Frame	⅜" ROCKLATH* Plain	Gypsum-Sand 1:2,	½"	45 Minutes
Wood Frame	⅜" ROCKLATH Plain	Gypsum Wood Fiber	½"	1 Hour
Wood Frame	⅜" Perf. ROCKLATH	Gypsum-Sand 1:2,	½"	1 Hour
Wood Frame	⅜" Perf. ROCKLATH	Gypsum-Perlite 100:2½	½"	1 Hour
Wood Frame	⅜" Perf. ROCKLATH	Gypsum Vermiculite 100:2½	½"	1 Hour
Wood Frame	Metal Lath	Gypsum-Sand 1:2, 1:3	¾"	45 Minutes
Wood Frame	Metal Lath	Gypsum-Sand 1:2, 1:2	¾"	1 Hour
Wood Frame	Metal Lath	Gypsum Wood Fiber	¾"	1½ Hours
Wood Frame	Metal Lath	Gypsum-Vermiculite 100:2½, 100:3½	¾"	1 Hour
3" Hollow PYROBAR*		Gypsum-Sand 1:3	½"	3 Hours
4" Hollow PYROBAR		Gypsum-Sand 1:3	½"	4 Hours
Solid	Metal Lath	Gypsum-Sand 1:2, 1:3	2"	45 Minutes
Solid	Metal Lath	Gypsum-Sand 1:2, 1:2	2"	1 Hour
Solid	Metal Lath	Gypsum-Perlite 100:2, 100:3	2½"	2 Hours
Solid	ROCKLATH	Gypsum-Sand 1:1, 1:2	2"	1 Hour
Solid	ROCKLATH	Gypsum-Perlite 100:2, 100:3	2"	1½ Hours
TRUSSTEEL* Stud	Metal Lath	Gypsum-Sand 1:2, 1:3	¾"	45 Minutes
TRUSSTEEL Stud	Metal Lath	Gypsum-Sand 1:2, 1:2	¾"	1 Hour
TRUSSTEEL Stud	Metal Lath	Gypsum-Sand 1:1, 1:2	¾"	1½ Hours
TRUSSTEEL Stud	Metal Lath	Gypsum Wood Fiber	⅞"	2 Hours
TRUSSTEEL Stud	Metal Lath	Gypsum-Perlite 100:2, 100:3	1"	2 Hours
TRUSSTEEL Stud	⅜" Perf. ROCKLATH BRACE-TITE* Clips	Gypsum-Sand 1:2 or STRUCTO-LITE*	½"	1 Hour
		CEILINGS		
Wood Frame	⅜" Perf. ROCKLATH (A)	Gypsum-Sand 1:2	½"	1 Hour
Wood Frame	⅜" Perf. ROCKLATH	Gypsum-Perlite 100:2½	½"	1 Hour
Wood Frame	Metal Lath (B)	Gypsum-Sand 1:2, 1:3	¾"	1 Hour
Wood Frame	Metal Lath	Gypsum Wood Fiber	¾"	1 Hour
Steel Joist (C)	⅜" Perf. ROCKLATH BRACE-TITE Clips Channels 16" o.c.	Gypsum-Perlite 100:2½ or STRUCTO-LITE	⅝"	1 Hour
Steel Joist (C)	Same, plus 14 Ga diagonal wire connecting clips	Gypsum-Perlite 100:2½ or STRUCTO-LITE	½"	2 Hours
Steel Joist (C)	Same, except channels 12" o.c.	Gypsum-Perlite 100:2½ or STRUCTO-LITE	⅝"	3 Hours
Steel Joist (C)	Metal Lath	Gypsum-Sand 1:2, 1:3	¾"	2 Hours
Steel Joist (C)	Metal Lath	Gypsum-Vermiculite 100:2, 100:3	¾"	3 Hours
Steel Joist (C)	Metal Lath	Gypsum Wood Fiber	1"	3 Hours
Steel Joist (C)	Metal Lath	Gypsum-Vermiculite 100:2, 100:3	1"	4 Hours
Cellular Steel Floor	Metal Lath (D)	Gypsum Wood Fiber	1"	4 Hours
Cellular Steel Floor	Metal Lath (E)	Gypsum-Vermiculite 100:2, 100:3	1"	4 Hours
Cellular Steel Floor	Metal Lath (D)	Gypsum-Perlite 100:2, 100:3	1"	4 Hours
Cellular Steel Floor	Metal Lath	Fire Rated STRUCTO-LITE (Type "R")	¾"	3 Hr. (Beam 4 Hr.)
Suspended Channel Ceiling (incombustible constr. above)	Metal Lath	Fire Rated STRUCTO-LITE (Type "R")	11/16"	3 Hours
		COLUMNS		
Steel Section	Metal Lath	Gypsum-Sand 1:2, 1:3	¾"	1 Hour
Steel Section	Metal Lath (F)	Gypsum-Perlite 100:2, 100:3	1"	2 Hours
Steel Section	Metal Lath (F)	Gypsum-Perlite 100:2, 100:3	1⅜"	3 Hours
Steel Section	Metal Lath (F)	Gypsum-Perlite 100:2, 100:3	1¾"	4 Hours
Steel Section	Metal Lath (G)	Fire Rated STRUCTO-LITE (Type "R")	1¾"	4 Hours
Steel Section	PYROBAR*-2" Solid, or 3" Hollow	Gypsum-Sand 1:3	½"	4 Hours
Steel Section	⅜" Perf. ROCKLATH	Gypsum-Sand 1:2½	½"	1 Hour
Steel Section	⅜" Perf. ROCKLATH	Gypsum-Sand 1:2½	⅝"	1½ Hours
Steel Section	⅜" Perf. ROCKLATH	Gypsum-Perlite 100:2½	1"	2 Hours
Steel Section	⅜" Perf. ROCKLATH	Gypsum-Perlite 100:2½	1¾"	3 Hours
Steel Section	2 layers L. L. R. L. Plus 1" 20-ga. mesh	Gypsum-Perlite 100:2, 100:3	1½"	4 Hours

(A) Lath applied with 1⅛", 13 gauge nails, ⅜" head and joints covered with Striplath. 1¾" nails. (B) Lath applied with 1½", 11 gauge, 7/16" head barbed roofing nails, 6" O.C. (C) 2½" reinforced concrete slab on Riblath or 2" precast gypsum tile above. (D) Ceiling 9" or more below floor slab. (E) Ceiling 3" or more below floor slab. (F) Self-furring metal lath wrapped tight to column, or diamond mesh on channel frame not filled solid to column. (G) Lath furred ½" at column corners with channels.

TECHNICAL DATA—BASECOAT PLASTERS (1)

PLASTER	MIX	COMPRESSIVE STRENGTH	WEIGHT	CONDUCTIVITY "K"
		(PSI-DRY)	(Lb/Cu. Ft. Dry)	
STRUCTO-LITE (Regular)	Neat	1000	50	1.74
WOOD FIBER		2000	77	3.15
CEMENT PLASTER, MIXED WITH:				
Sand	1:1	1800	90	
	1:2	1065	103	5.51
	1:3	650	102	5.60
Perlite	100:2	900	48	1.64
	100:3	550	41	1.31
Vermiculite	100:2	485	48	1.74
	100:3	290	41	1.42

(1) Average Test Results. Figures May Vary Slightly For Products From Individual Mills.

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*T. M. Reg. U. S. Pat. Off.

LIME AND GAUGING LIME AND KEENE'S

(White Coat)

GAUGING PLASTERS

CHAMPION* and STAR* White Gauging Plasters for blending with lime putty to provide initial set and strength. CHAMPION for fast set, STAR for slow set. Ground to blend readily and completely, minimizing risk of check-cracking and crazing. Give strength and hardness to surface finish. Comply with ASTM Designation C28-55 and Federal Specification SS-P-402, Type G.

RED TOP Gauging Available with slow or quick set. Distinguished from White Gauging Plasters by its darker color; otherwise the equal of CHAMPION and STAR in every respect. Complies with same ASTM and federal specifications.

STRUCTO-GAUGE A new high strength gypsum gauging plaster for use with lime putty to produce surfaces of extreme hardness and durability. Has excellent mixing qualities, is easily applied, and needs minimum troweling to give a smooth finish. Complies with same ASTM and Federal Specifications with added requirement of compressive strength (neat) of not less than 5000 psi (dry).

FINISHING LIMES

Hydrated Finishing Lime (or Finishing Quicklime) is soaked (or slaked) to putty consistency, properly blended with gypsum gauging plaster, and troweled to a smooth, hard finish. Ease of application, flexibility, whiteness, and economy make this by far the most widely used plaster finish coat.

IVORY*. A double hydrated special finishing lime that will not expand measurably in the wall. Requires no soaking to produce smooth, uniform, white, and highly plastic putty. Complies with ASTM Designation C206-49 Types S and Federal Specification SS-L-351, Type F, including the added requirement of not more than 8% unhydrated oxides.

RED TOP and GRAND PRIZE* Normal Ohio dolomitic hydrated finishing limes. Comply with ASTM Designation C6, Type N, and Federal Specification SS-L-351, Type F, but not with specifications limiting unhydrated oxides to not more than 8 per cent.

RED TOP and CHESHIRE* High calcium finishing quicklimes. When properly slaked and aged at least 16 hours, hydration is virtually complete. Comply with ASTM C5 and Federal Specification SS-Q-351, including added requirement of not more than 8% unhydrated oxides (when properly slaked).

KEENE'S CEMENT

RED TOP Keene's cement is a high strength, white gypsum plaster. Keene's lime finish is composed of lime putty blended with keene's cement in proportions required to obtain desired hardness. Complies with ASTM Designation C61-40 and Federal Specification SS-C-161, Type I (Regular) and Type II (Quick Troweling). Regular Keene's sets slowly, requires more troweling and may be used with any proportion of lime.

Quick Troweling Keene's sets faster, requires less troweling and must be used with a minimum of 25 lbs. of dry hydrated lime per 100 lbs. of Keene's cement.

LIMITATIONS OF USE — FINISHES

1. All finishes (except ORIENTAL Exterior) should be used for interior application only, generally over a gypsum basecoat not exposed to water. If exposure to wetting is extreme or continuous use portland cement—lime plaster base-coat and finish.

2. Recommended proportions must be observed. Failure to use sufficient gauging plaster or Keene's, to blend thoroughly or to trowel adequately often results in check-cracking, crazing, lack of hardness and bond failure.

3. The use of gypsum gauged-lime finishes is not recommended over soft basecoats of low compressive strengths. Use sand float finishes. For smooth putty coat finishes over STRUCTO-LITE the addition of 25 lbs. of No. 1 white Silica Sand or ½ cubic ft. of perlite fines per 100# of Gauging Plaster is recommended for improved working conditions and to minimize check cracking.

4. Where increased hardness and resistance to abrasion is required use STRUCTO-GAUGE, Keene's Cement or Gypsum Trowel Finish. (See technical data for relative hardness, Page 6). These finishes may be applied over Wood Fiber or Sanded Plaster Basecoats only.

5. Acoustical plasters are designed for use on ceilings and areas not exposed to rough usage.

6. Acoustical plasters are not recommended over radiant heated panel areas due to low thermal conductivities.

7. ORIENTAL Exterior colored finish must be applied to a Portland cement—lime basecoat only.

*T.M. Reg. U.S. Pat. Off.

PREPARED GYPSUM

RED TOP Gypsum Trowel and RED TOP GYPSUM Sand Float. Mill-prepared gypsum finish coat plasters which require only the addition of water. There are no ASTM or Federal Specifications covering this type of plaster.

RED TOP Gypsum Trowel Finish is used where hard, smooth finishes are desired.

RED TOP Gypsum Sand Float Finish is used where a quality float finish is desired.

Strength. Approximately twice the impact strength of ordinary lime-gauging finishes.

Early decoration. May be painted as soon as plaster is set and dry. Nonalkaline. These finishes contain nothing injurious to paint or other decoration.

COLORED

ORIENTAL Interior. A mill prepared, mill colored finish plaster which requires only the addition of water. There are no ASTM or Federal Specifications covering this type of plaster.

Colors: White, with 81% light reflection for float finish; Pewter Gray, 52%; Surf Green, 56%; Desert Rose, 56%; Azure, 58%; Sahara Gold, 63%. Use on interiors only for a finely floated surface or special textured finish. Do not use for a smooth finish. Very great hardness protects against abrasion.

ORIENTAL Exterior. A mill-prepared stucco for exterior use over a portland cement-lime basecoat only; requires only the addition of water.

Colors: Pewter Gray, Eggshell Ivory, Sun Tan, Stone Gray, Copper Rose, Alamo Buff, Mission Cream, Cascade Green, Pueblo Tan, Indian Coral, Rancho Brown, White. Adaptable to any texture. Requires no decoration; mill preparation of color eliminates risk of variation due to job addition. Not designed for smooth trowel finish.

MOULDING PLASTERS

Moulding Plasters are made for specialized work such as casting ornamental enrichments or running cornices. In cast work, moulding plaster is used neat. For running cornice a small amount of lime is added. Moulding plaster is available in white and local grades and in quick or slow set.

CASTING PLASTER

RED TOP Superfine Casting Plaster is similar to RED TOP White Moulding Plaster, but with much finer particle size. Ideal for modeling done directly in plaster. The tiny particles assure smoother castings and excellent detail for fine plaques and art statuary. Requires only the addition of water.

ACOUSTICAL

SABINITE*. A highly efficient acoustical plaster which produces a continuous trowel or float finish of exceptional sound absorbent qualities. Manufactured in four standard colors and white. Requires addition of water only. Incombustible.

HI-LITE*. A highly efficient acoustical plaster with high light reflecting qualities; provides a stipple or stipple perforated finish. Has harder surface than SABINITE; more suitable for side walls above wainscots which require sound conditioning. White only. Over 75% light reflection. Requires addition of water only. Can be applied over either gypsum or Portland cement-lime basecoats. Adaptable for acoustical treatment of areas similar to swimming pool enclosures.

AUDICOTE*. A prepared acoustical plaster requiring only the addition of water. May be applied by machine or by hand over gypsum plaster, portland cement-lime plaster, monolithic concrete surfaces that are clean and free of water-soluble materials or oily film. Made in Satin White (65% light reflection) and Special White (70% light reflection).

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*T.M. Reg. U.S. Pat. Off.

Notes to Architect

Select one or more of the following basecoat plasters, aggregates and finish coat plasters as desired or required to meet fire-resistant ratings. Where conductivity of the plaster is a factor, see limitations on Pages 3, 4, and 10.

Where "contact," "furred" or "suspended" lath and plaster ceilings are located under roof deck construction, it is recommended that the space thus established be ventilated. Such ventilation, with or without vapor barrier and insulation, shall be designed in accordance with accepted engineering practice.

I. Scope. Unless otherwise specified or shown on the drawings, all walls and ceilings shall be plastered as herein described.

II. GENERAL PROVISIONS. In cold weather, the temperature of the building shall be maintained in the uniform range above 55° for an adequate period prior to the application of plaster, while the plastering is being done, and after the plaster is dry. The heat shall be well distributed in all areas, with deflection or protective screens used to prevent concentrated or irregular heat on plaster areas near source. When required, heat shall be furnished by

....

Ventilation shall be provided to properly dry the plaster during and subsequent to its application. In glazed buildings, this shall be accomplished by keeping windows open sufficiently to provide air circulation; in enclosed areas lacking normal ventilation, provisions must be made to mechanically remove moisture laden air.

If glazed sash are not in place and the building is subjected to hot, dry winds or temperature differentials from day to night of 20°F or more, openings shall be screened with cheesecloth or similar material.

III. GROUNDS. The minimum thickness of plaster over 16"x48" gypsum lath shall be ½"; over gypsum partition tile brick, clay tile or other masonry, it shall be ⅝" thick; over metal lath, the plaster thickness shall be ⅝" measured from the face of the lath; and ¾" over long length gypsum lath. Solid plaster partitions shall be (2"), (2¼"), (2½"), (3"). (A greater thickness in grounds may be required for certain fire ratings. See table, page 7, and specify accordingly.)

IV. MATERIALS. Base Coat Plaster shall be (Structo-Lite), (Red Top Cement Plaster), (Red Top Wood Fiber Plaster), (Bondcrete) as manufactured by the United States Gypsum Company.

Aggregate (for cement plaster), (wood fiber over unit masonry), shall be (sand), (perlite), (vermiculite) meeting the requirements of ASTM Designation C35-54T—"Inorganic Aggregate for use in Interior Plastering."

Aggregate for job mixed sand float finish shall be a graded silica sand all passing a (30 mesh), (20 mesh) screen.

Water shall be clean, fresh and suitable for domestic consumption.

For (Exterior Stucco Base), (Portland Cement-Lime plaster) the **Portland Cement** shall comply with A.S.T.M. Designation C150-47, the **Lime** shall be Mortaseal as manufactured by the United States Gypsum Company, and the **Sand** shall be clean and sharp and shall meet the requirements of American Standards Association Specifications A42-2.

Finish Coat Plaster shall be:

a. Gypsum gauged lime putty trowel finish made from (Ivory Double Hydrated Lime), (Red Top Finishing Lime), Grand Prize Finishing Lime), and Champion Gauging Plaster), (Star Gauging Plaster), (Red Top Gauging Plaster), as manufactured by the United States Gypsum Company.

b. High strength Gypsum gauged lime putty trowel finish made from (Ivory Double Hydrated Lime), (Red Top Finish Lime), (Grand Prize Finishing Lime), and (Structo-Gauge), (Red Top Quick Trowelling Keene's Cement), as manufactured by the United States Gypsum Company.

c. Red Top Gypsum Trowel Finish as manufactured by the United States Gypsum Company.

d. Red Top Gypsum Sand Float Finish as manufactured by the United States Gypsum Company.

e. Oriental Interior Colored Finish as manufactured by the United States Gypsum Company.

f. A job mixed sand float finish made from Ivory Double Hydrated Lime, Red Top Keene's Cement and silica sand.

g. (Sabinite), (Audicote), (Hi-Lite) Acoustical Plaster as manufactured by the United States Gypsum Company.

h. Ornamental run mouldings made with Red Top Moulding Plaster and Ivory Double Hydrated Lime, and cast enrichments made with USG Casting Plaster, as required.

i. Exterior finish coat shall be Oriental Exterior Colored finish as manufactured by the United States Gypsum Company.

V. SURFACE PREPARATION.

a. Monolithic concrete to which Bondcrete is to be applied shall be cleaned of all dust, loose particles and other foreign matter. Laitance and efflorescence shall be removed by washing with a 10% solution of commercial muriatic acid and water, and then cleaning with water to remove all traces of acid. Grease and oil shall be completely removed. Concrete surfaces shall have sufficient roughness to provide proper bond. If surfaces are not rough, they shall be hacked or bush-hammered, or dash coated with Portland cement grout composed of one part of cement and one and one-half parts of fine sand mixed to a mushy consistency. This coat shall be kept damp for at least two days immediately following its application and then allowed to dry. Before application of the plaster, the surface shall be evenly dampened if necessary to reduce suction.

b. Unit masonry surfaces that exhibit high suction shall be moderately wetted immediately before plastering.

c. Where Red Top Audicote acoustical plaster is indicated for application direct to smooth monolithic concrete, low reinforcing bar chair legs shall be galvanized. Bottom ends of high reinforced bar chairs shall be coated with rust inhibitive paint and use of nails or other raw steel against forms or surface of concrete held to a minimum. Where metal is exposed in spite of these precautions, and where Audicote is to be applied directly against corner beads or casing beads, the metal should be treated with one coat of aluminum paint.

VI. BASE COAT PROPORTIONS.

a. Structo-Lite shall be regular formula for all lath bases and masonry formula for masonry bases.

b. Red Top Cement Plaster for the scratch or first coat over all lath bases in three-coat work shall be mixed in proportion of (one part of plaster to not more than two parts of sand by weight), (100 pounds of plaster to two cubic feet of perlite), (100 pounds of plaster to two cubic feet of vermiculite).

Red Top Cement Plaster for all unit masonry surfaces and for the brown or second coat over lath bases shall be mixed in the proportion of (one part plaster to not more than three parts sand by weight), (100 pounds of plaster to three cubic feet of perlite), (100 pounds of plaster to three cubic feet of vermiculite).

Red Top Cement Plaster, when mixed for two-coat work over gypsum lath, shall be mixed in the proportion of (one part of gypsum to not more than 2½ parts of sand by weight), (100 pounds of gypsum to not more than 2½ cubic feet of perlite), (100 pounds of gypsum to not more than 2½ cubic feet of vermiculite).

c. Red Top Wood Fiber Plaster. For application over all types of lath, shall be mixed with water only.

For masonry surfaces (except monolithic concrete), the scratch and brown coats of wood fiber plaster shall have (one part of sand by weight), (one cubic foot of perlite per 100 pounds), (one cubic foot of vermiculite per 100 pounds) added.

d. Bondcrete shall be mixed with clean water only.

e. For (Exterior Stucco), (Portland Cement-Lime plaster), the scratch (first coat) shall be mixed in the proportion of one bag of Portland cement; two bags of Mortaseal (or two cubic feet of lime putty) and seven and one-half cubic feet of sand (approximately 45 No. 2 shovels). For application over stucco mesh or self-furring metal lath, approximately two pounds of fiber or hair shall be added to each mix of the above proportions.

The brown coat (second coat) shall be mixed in the proportion of one bag of Portland cement, two bags of MORTASEAL (or two cubic feet of lime putty) and nine cubic feet of sand (approximately 55 No. 2 shovels).

VII. GROUT. Grout for door frames and metal base shall be (STRUCTO-LITE), (RED TOP Cement Plaster) and not more than (200 pounds sand), (2 cubic feet of perlite) per bag of plaster.

VIII. MIXING OF BASE COATS. For hand mixing, the mixing boxes shall be watertight and thoroughly clean of all set or hardened material. All tools and equipment shall be cleaned after mixing each batch. Do not mix more material than can be used in one hour.

a. STRUCTO-LITE shall be mixed with clean water only and hoed to uniform application consistency.

b. RED TOP Cement Plaster and aggregate shall be mixed dry to a uniform color at one end of the box, hoed into the water at the other end and thoroughly mixed to proper consistency.

c. RED TOP Wood Fiber shall be mixed with clean water only and hoed to uniform application consistency. (For application over unit masonry aggregate shall be added and dry mixed prior to adding water.)

d. BONDCRETE shall be mixed with clean water only and hoed to uniform application consistency.

For mechanical mixing, the mixer shall be cleaned of all set or hardened material before materials for a new batch are loaded. Each batch shall be mixed separately, not less than 2 minutes or more than 7 minutes, depending on the speed of the mixer. Material that has partially set shall not be retempered or used. Mix no more material than can be used in one hour. Mixers should be equipped with rubbertipped blades to keep partially set material from accumulating in the barrel of the mixer.

a. For STRUCTO-LITE plaster, no aggregate shall be added. Put the approximate amount of water in the mixer and add the STRUCTO-LITE and mix to proper application consistency, adding water if necessary, and dump the entire batch and use.

b. RED TOP Cement Plaster; put the approximate amount of water required in the mixer, then, while the mixer is in continuous operation, add approximately half the amount of aggregate required, add all of the plaster and add the remainder of the aggregate. Mix to proper application consistency, adding water if necessary, and dump the entire batch.

c. For Gypsum Wood Fiber Plaster; add the approximate amount of water required. Then add the plaster and mix to proper application consistency.

d. For BONDCRETE Plaster, add clean water only, then add the plaster and mix to proper application consistency.

IX. GROUTING.

a. All steel door frames in (solid lath and plaster partitions) (steel stud partitions) shall be fully grouted prior to lathing, leaving a groove to receive the lath.

b. All 2½" flush metal base for solid lath and plaster partitions and furred exterior walls shall be grouted. Provide a V-Groove to receive (ROCKLATH plaster base) (⅜" Riblath). (Grout after channel studs are erected for channel stud metal lath partitions.)

c. All metal base applied to masonry or stud partitions shall be grouted.

X. BASE COAT APPLICATION.

a. For two-coat work over gypsum lath and masonry, the base (first) coat shall be applied with sufficient material and pressure to form a good bond on the gypsum lath or masonry, as the case may be and to cover well, and then be doubled back to bring the plaster out to grounds, straightened to a true surface with rod and darby, and left rough, ready to receive the finish (second) coat.

b. For three-coat work, the scratch (first) coat shall be applied with sufficient material and pressure to form good full keys on metal lath, and a good bond on gypsum as the case may be, and to cover well, and then be cross scratched to a rough surface. The brown (second) coat shall be applied after the scratch (first) coat has set firm and hard, brought out to grounds and straightened to a true surface with rod and darby and left rough, ready to receive the finish (third) coat.

c. For (2¼") solid gypsum lath and plaster partitions, apply a scratch coat of plaster with a maximum 3-hour set, about ⅜" thick, to each side of the lath. In no case, shall application of scratch coat to second side of lath be delayed longer than the setting time of the scratch coat applied to the first side. Scratch lightly in horizontal direction only.

After the scratch coats have set firmly and have partially dried (but not less than 16 hours), the brown coat shall be applied to the unbraced side, bringing it out to within 1/16" of ground dimension for finish coat. When brown coat has set firmly (but not less than 3 hours), braces shall be carefully removed from opposite side and brown coat applied to that side in a manner similar to that described for the other brown coat.

d. For (2¼") solid studless metal lath and plaster partitions apply scratch coat and allow it to set and partially dry. Then apply brown coat to side opposite braces, allowing it to set thoroughly before removing temporary braces. Next apply brown coat to previously braced side, bringing it out to sufficient thickness to bring overall partition thickness to grounds when finish coats are applied to both sides.

e. For (2¾") channel stud, metal lath and plaster partitions apply scratch coat on lath side and allow it to set and partially dry. Then apply back-up coat on channel side to full grounds, ⅝" over channels, in not less than two operations and allow to set. Next apply brown coat on lath side bringing it out to sufficient thickness to bring overall partition thickness to grounds when finish coats are applied to both sides.

f. For resilient ROCKLATH ceilings, three coat plaster work shall be used. Apply a full scratch coat, cross rake and allow to set. Then apply brown coat to bring total thickness of plaster to 7/16" over the lath, darby level and leave rough ready for finish coat.

g. For BRACE-TITE system ceilings, apply Gypsum plaster in two or three coats to a thickness of ½". If two-coat method is used, the job setting time of the basecoat plaster shall not exceed three hours. A minimum period of 20 minutes shall be allowed between Scratch coat and double-back applications in two-coat plastering over both plain and perforated ROCKLATH plaster base. Proper heat and ventilation during plastering is mandatory for good two-coat performance.

h. For (exterior wall furring) (hollow partitions) having long length ROCKLATH three-coat plaster work shall be used to a total thickness of ¾" over the lath.

i. For column fireproofing total thickness of plaster over lath face shall be (½"), (⅝"), (1"), (1⅜"), (1¾"). Apply a full scratch coat, cross rake and allow to set. Then apply brown coat to within 1/16" of thickness required and leave level and rough ready for application of finish coat.

j. Where plaster finish is flush with metal bases, door frames, window frames or similar constructions, both the brown coat and the finish coat should be grooved back at the intersection to reduce possibility of chipping of plaster at these points.

k. At windows, doors and other openings all base coat plaster across head of opening and 12 inches down, each side, shall be cut free of frame or grounds with edge of trowel, after stiffening but before setting, to allow for expansion.

l. Scratch coat of (Exterior stucco) (Portland cement—Lime plaster) shall be applied in a full ⅜" coat, with sufficient pressure to form a good bond with masonry surfaces or to force it through and completely embed the metal reinforcement. Cross scratch and, after set, damp cure for not less than 48 hours.

Brown coat shall be applied over the dampened scratch coat in a full ⅜" coat with sufficient pressure to form a good bond, rodded level and left rough, using a broom if necessary. After set, damp cure for at least 48 hours before applying the finish (third) coat.

Damp curing of each coat shall be accomplished by applying water in a fine, fog spray. Apply only as much water as is readily absorbed. The frequency of spraying required will depend on the weather exposure, more frequent applications being required during hot, dry and windy weather.

XI. PREPARATION OF LIME PUTTY. IVORY Finishing Lime shall be mixed with clean water only, using approximately 5½ to 6 gallons per bag. The putty may be prepared by overnight soak, or by mixing by hand or machine. Run mixer for sufficient time to get a smooth, thoroughly mixed putty which can be used immediately or run into a box for use as required. When stored in a box after mixing, do not permit putty to get crusty or to dry out. Mixer, tools and equipment must be clean.

XII. PROPORTIONS OF FINISH COATS.

a. Gypsum gauged lime putty finish shall be mixed in the proportions of 100 pounds of gauging plaster to 200 pounds of dry lime (400 pounds, or 34 gallons, of lime putty). Over lightweight aggregate basecoats, add up to ½ part (3 shovels) of fine Silica Sand, or up to ½ cu. ft. of perlite fines, per 100 pounds of gauging plaster.

b. Medium hard STRUCTO-GAUGE-Lime Putty Finish shall be mixed in the proportion of 100 pounds of (Structo-Gauge) to 200 pounds of dry lime (400 pounds, or 34 gallons, of lime putty).

c. Hard STRUCTO-GAUGE-Lime Putty Finish shall be mixed in the porportion of 100 pounds of STRUCTO-GAUGE to 100 pounds of dry lime (200 pounds, or 17 gallons, of lime putty).

d. Medium hard Keene's Cement-Lime Putty Finish shall be mixed in the proportion of 100 pounds of Keene's Cement to 50 pounds of dry line (100 pounds, or 8½ gallons of lime putty).

e. Hard Keene's Cement-Lime Putty Finish shall be mixed in the porportion of 100 pounds of Keene's Cement to 25 pounds of dry lime (50 pounds, or 4¼ gallons of lime putty).

f. Keene's Cement-Sand Float Finish shall be mixed in the proportion of 100 pounds of Keene's Cement to 50 pounds of dry lime and 400 pounds of sand (100 pounds, or 8½ gallons of lime putty) and 4 to 5 cubic feet of sand (27 No. 2 shovels of sand).

g. RED TOP Gypsum Trowel Finish shall be mixed with clean water only to proper application consistency.

h. RED TOP Sand Float Finish shall be mixed with clean water only to proper application consistency.

i. ORIENTAL Interior Colored Finish shall be mixed with clean water only to proper application consistency.

j. ORIENTAL Exterior Colored Finish shall be mixed with clean water only to proper application consistency.

XIII. APPLICATION OF FINISH COATS. Finish coat shall be applied over a partially dry, level and roughened gypsum base coat.

The finish coat shall be scratched in thoroughly and immediately doubled back to fill out to a true, even surface. Thickness should be no more than ⅛". (Except Acoustical Plaster which shall be ½" thick.")

a. Trowel finishes shall be water troweled during and after set to provide a smooth, dense surface for decoration, free of irregularities and blemishes.

b. Float finishes shall be floated with shingle, wood, carpet or rubber float to bring aggregate to the surface and produce a finish free of slick spots, cat faces, and other blemishes. In natural color finishes, use water sparingly while floating. Do not use water while floating colored finishes.

c. Textures shall be applied in such a manner that they will match the sample approved by the architect.

d. SABINITE Acoustical Plaster finish shall be (Trowel) (Float) applied according to manufacturer's directions which are hereby made a part of this specification.

e. HI-LITE Acoustical Plaster finish shall be (stipple-perforated) applied according to manufacturer's directions, which are hereby made a part of this specification.

f. RED TOP AUDICOTE Acoustical Plaster finish shall be (Spray Texture) (Float) (Stipple-perforated) (Trowel) applied according to manufacturer's directions which are hereby made a part of this specification.

g. Ornamental plaster shall be executed in accordance with the full-sized details shown on the drawings. Cornices and moldings shall be run full, straight and true with molding plaster, using clean cut metal templets conforming to the profiles shown on the drawings. Lines shall be in alignment, with true intersections, and accurate mitres at corners and angles. Enriched ornamental work which cannot be run in place shall be cast with casting plaster in gelatine molds. The work shall be solidly backed with jute or burlap, shall be properly reinforced with galvanized iron, and shall be securely stuck and wired in place with copper wires not lighter than 16 gauge. All joints shall be carefully made and neatly pointed so as to be invisible. All rough spots shall be eliminated with fine sandpaper, and the entire work left in proper condition, ready for decoration.

h. ORIENTAL Exterior colored finish shall be mixed and applied in strict accordance with the manufacturer's directions. Color and texture to be designated and approved by the architect or his representative.

XIV. PATCHING. Point up around trim and other work. Cut out and patch defective and damaged plaster. Patching of plaster shall match existing work in texture and finish and joinings with plaster previously applied shall finish flush and smooth.

XV. COMPLETION. At the completion of the finish plaster work, clean all plaster from beads, screeds, metal base and metal trim, leaving work ready for decoration by others. Remove all plaster rubbish from the building, leaving floors broom clean. Remove excess material from the job site. Remove all scaffolding, tools and other equipment from the building and job site.

"STRUCTO-LITE," "RED TOP," "BONDCRETE," "PYROBAR," "ROCKLATH," "ORIENTAL," "SABINITE," "IVORY," "GRAND PRIZE," "MORTASEAL," "CHESHIRE," "CHAMPION," "STAR," "BRACE-TITE" "TRUSSTEEL," "HI-LITE," "AUDICOTE" and "USG" are registered trade-marks; "STRUCTO-GAUGE" is a trade-mark owned by United States Gypsum and is used by it to distinguish products of its manufacture.

"STRUCTO-LITE" identifies the particular prepared plaster manufactured only by United States Gypsum.

"RED TOP" identifies the particular plasters and finishes manufactured only by United States Gypsum.

"BONDCRETE" identifies the particular plaster for concrete surfaces manufactured only by United States Gypsum.

"PYROBAR" identifies the particular gypsum partition tile manufactured only by United States Gypsum.

"ROCKLATH" identifies the particular gypsum lath or plaster base manufactured only by United States Gypsum.

"ORIENTAL" identifies the particular colored finishes manufactured only by United States Gypsum.

"SABINITE," "AUDICOTE" and "HI-LITE" identify the particular acoustical plasters manufactured only by the United States Gypsum Company.

"IVORY" and "GRAND PRIZE" identify the particular hydrated lime manufactured only by the United States Gypsum Company.

"CHESHIRE" identifies the particular high calcium finishing lime manufactured only by United States Gypsum.

"MORTASEAL" identifies the particular masonry lime manufactured by United States Gypsum.

"CHAMPION" and "STAR" identify the particular white gauging plasters manufactured only by the United States Gypsum Company.

"STRUCTO-GAUGE" identifies the particular prepared gauging plaster manufactured only by United States Gypsum.

"TRUSSTEEL" identifies the particular truss designed stud manufactured only by the United States Gypsum Company.

"BRACE-TITE" identifies the particular attachment clips manufactured only by the United States Gypsum Company.

AIA File 39-B

TECHNICAL INFORMATION

ACOUSTICAL PLASTERS

UNITED STATES GYPSUM

1959

AIA File 39-B

ACOUSTICAL PLASTERS

DESCRIPTION

United States Gypsum Company manufactures three acoustical plasters designed to satisfy specific noise reduction requirements. They are easily applied, provide effective sound conditioning, and being basically mineral, are incombustible.

FUNCTION AND UTILITY

Noise Reduction Coefficients range from .55 to .60. Low in initial cost, they give more sound absorption per dollar than most other commonly used acoustical materials.

For Any Architectural Design their medium to high light reflection properties, combined with a variety of finishes, provide excellent acoustical treatment.

Fire Resistance: In a standard fire test, a floor-ceiling construction consisting of a concrete slab on a cellular steel floor with suspended metal lath ceiling and ⅝″ gypsum-perlite basecoat (100:2; 100:3) with ½″ Acoustical Plaster finish, endured in excess of 5 hours, easily providing a 4 hour rating.

TECHNICAL DATA

ACOUSTICAL PLASTER	FINISH	THICKNESS AND BASE	LIGHT REFLECTANCE PERCENT	HEAT INSULATION "K" FACTOR
SABINITE	Trowel	One half inch applied to a Gypsum Plaster Basecoat on Metal Lath.	.53	.59
	Float		.51	
HI-LITE	Stippled		.80	.50
	Stipple-Perforated		.77	
AUDICOTE	Darbied		Satin White .65	.50
	Machine Textured		Special White .70	.50

Light reflectance from tests at a recognized independent laboratory.
Heat insulation data from tests at USG laboratory.

ACOUSTICAL PLASTER	FINISH	SOUND ABSORPTION						
		FREQUENCY						
		125	250	500	1000	2000	4000	NRC
SABINITE	Trowel	.54	.27	.47	.76	.99	.88	.60
	Float	.49	.32	.42	.66	.83	.81	.55
HI-LITE	Stippled	.41	.26	.59	.78	.84	.65	.60
	Stipple-Perforated	.20	.24	.50	.76	.83	.76	.60
AUDICOTE	Darbied	.64	.29	.55	.83	.80	.80	.60
	Machine Textured	.59	.28	.51	.73	.77	.77	.55

Base—One half inch applied to a Gypsum Plaster Basecoat on Metal Lath.
Sound absorption from tests at a recognized independent laboratory.

HI-LITE* ACOUSTICAL PLASTER

DESCRIPTION

HI-LITE Acoustical Plaster may be applied over properly prepared gypsum plaster or portland cement-lime plaster basecoats. Formulated for hand application, it develops its maximum acoustical efficiency through mechanical opening of the surface, and therefore must be stippled or stipple-perforated. Requires the addition of water only.

Colors—Available in white only.

FUNCTION AND UTILITY

Sound Absorption—Noise reduction coefficient of .60 when stippled or stipple-perforated. (See table for individual frequencies.)

High Light Reflection—Light reflection is in excess of .75 for both stippled and stipple-perforated finish. (See table.)

Maintenance—HI-LITE Acoustical Plaster may be cleaned with a vacuum cleaner using hose and brush attachments.

Paintable—May be redecorated with TEXOLITE* paint (Standard or Imperial). Tests by a nationally recognized laboratory showed HI-LITE Acoustical Plaster with a stipple-perforated finish had no loss in the noise Reduction Coefficient after 4 spray coats of Imperial TEXOLITE paint were applied.

Adaptability—HI-LITE, when applied to a portland cement-lime basecoat, may be used in areas of moderately high humidity such as ceilings over swimming pools.

LIMITATIONS OF USE

1. HI-LITE must be machine mixed to develop proper density.
2. Designed for use on ceilings or wall areas not subject to contact.
3. When perforated, a special perforator with rust resistant prongs should be used.
4. HI-LITE is not recommended for use over radiant heating panels, or for direct application to monolithic concrete.

*T. M. Reg. U. S. Pat. Off.

HI-LITE Stipple-Perforated

AUDICOTE Machine-Textured Finish

SABINITE Trowel Finish

"SABINITE", "HI-LITE", "AUDICOTE", "TEXOLITE", "ROCKLATH", "RED TOP", are registered trademarks owned by the United States Gypsum and used by it to distinguish its products. "SABINITE", "HI-LITE", and "AUDICOTE" identify the particular acoustical plaster; "TEXOLITE" identifies the particular interior paint; "ROCKLATH" identifies the particular plaster base; "RED TOP" identifies the particular plaster; all manufactured by United States Gypsum.

AUDICOTE* ACOUSTICAL PLASTER

DESCRIPTION

AUDICOTE Acoustical Plaster may be applied over properly prepared gypsum plaster or portland cement-lime plaster basecoats, or direct to monolithic concrete. Although developed primarily for machine application it may also be applied by hand. In addition to a fine or medium machine textured finish, it may be stippled, stipple-perforated, floated or trowelled. AUDICOTE attains its hardness through drying, and develops its acoustical properties by fissuring. Requires the addition of water only. Particularly adaptable to large unbroken ceiling areas where machine application will result in a uniform textured finish.

Colors

Available in Satin White and Special White.

FUNCTION AND UTILITY

Sound Absorption—Noise Reduction Coefficient of .55 for machine textured finish; .60 for hand darbied finish. (See table for individual frequencies.)

Light Reflection

Either machine textured finish or hand applied finish has a light reflection of .65 for Satin White and .70 for Special White.

Paintable—Tests show no loss in Noise Reduction Coefficient after 2 spray coats of TEXOLITE (Standard or Imperial) applied to U.S.G. specification for painting acoustical plasters.

Maintenance—May be spray painted or refinished with a spray applied coat of AUDICOTE.

LIMITATIONS OF USE

1. AUDICOTE is designed for use on ceiling and wall areas not subject to contact.
2. While a rust inhibitor is used in Audicote, a full brown coat is necessary to help eliminate the possibility of rusting through of tie wires or exposed metal lath.
3. AUDICOTE is not recommended for use over radiant heating panels.

SABINITE* ACOUSTICAL PLASTER

DESCRIPTION

For application over a properly prepared gypsum basecoat. Formulated for hand application, it may be finished with trowel or float, and requires the addition of water only. Any good plaster craftsman can apply.

Colors—Available in Oyster White, Antique Ivory, Spanish Buff, Caenstone, and Colonial Cream.

FUNCTION AND UTILITY

Sound Absorption—Noise reduction coefficient of .60 with Trowel Finish; .55 for float finish. (See table for individual frequencies.)

Light Reflection—Laboratory tests of Oyster White indicate light reflection of .53 for Trowel Finish and .51 for Float Finish.

Maintenance—SABINITE trowel or float finish may be cleaned with a vacuum cleaner, using hose and brush attachment. SABINITE trowel finish may also be cleaned with a putty type wallpaper cleaner.

Painting—SABINITE may be redecorated with TEXOLITE* paint (Standard or Imperial). Apply according to U.S.G. specification for painting SABINITE. Tests show no loss in the noise reduction coefficient after two spray coats.

LIMITATIONS OF USE

1. Designed for use on ceilings and areas not subject to contact.
2. SABINITE Acoustical Plaster should not be used where exposed to excessive moisture, nor on exterior areas where exposed to the elements.
3. SABINITE is not recommended for use over radiant heating panels.

*Trademarks Reg. U.S. Pat. Off.

SPECIFICATIONS

The following short form specification may be used in the general plastering specifications.

GENERAL PROVISIONS

General provisions for plastering apply to acoustical plaster application.

SCOPE

As indicated on drawings, all walls and ceilings shall be finished as herein described.

MATERIALS

Acoustical plaster shall be (choose one)

1. SABINITE Acoustical Plaster (Trowel Finish) (Float Finish).
2. HI-LITE Acoustical Plaster (Stippled Finish) (Stipple-Perforated Finish).
3. AUDICOTE Acoustical Plaster (Machine Textured Finish) (Stipple Finish) (Trowel Finish) (Darbied Finish) as manufactured by the United States Gypsum Company. Color shall be as selected by the architect.

MIXING AND APPLICATION

Mixing and application of acoustical plaster and basecoat plaster shall be in strict accordance with the manufacturer's latest printed directions which are hereby made a part of this specification.

MIXING AND APPLICATION

SABINITE ACOUSTICAL PLASTER—

Trowel or Float Finish

Mixing

Machine mixing recommended. Put 22 quarts clean water in mixer for each bag of SABINITE. Add SABINITE to water and mix until mortar weighs 15 to 18 lbs. net per 12-qt. pail (usually 3 to 5 minutes, depending on speed of mixer). For hand mixing, place SABINITE in one end of mixing box. For each bag of SABINITE add 23 qts. of clean water in other end. Hoe SABINITE into water. The mix will appear dry, but do not add more water. Mix until mortar weighs 15 to 18 lbs. net per 12-qt. pail (approximately 8–10 minutes per 2-bag batch).

Application

SABINITE shall be applied in 2 coats to a uniform total thickness of ½" over a basecoat of RED TOP* gypsum plaster. A full scratch and brown coat are required over metal lath, ROCKLATH* plaster base, and masonry bases (excluding monolithic concrete) to provide proper rigidity, strength, and a solid base for the acoustical plaster.

Apply the first coat of SABINITE ¼" thick by scratching in and doubling back over a set semi-green gypsum plaster basecoat that is level and cross raked. If basecoat is dry, spray lightly to reduce suction. Allow to set and partially dry (at least overnight) before applying finish coat.

Apply SABINITE finish coat to a thickness of ¼" scratching in and doubling back, over a set, partially dry first coat. Bring total thickness to ½". Leave surface uniformly level and free of trowel marks, working from wet edge. Finish areas in one operation to avoid joinings. Trowel Finish—after gloss leaves surface and surface is firm, trowel lightly to a uniform texture. *Do not use water during troweling.* Float Finish—float second coat 5 to 10 minutes after gloss has left surface and surface is firm. Use a shingle, cork, or carpet float. *Do not use water in floating.*

HI-LITE ACOUSTICAL PLASTER

Stipple or Stipple-Perforated Finish

Mixing

Machine Mixing Required: Use approximately 33 quarts of clean water per bag of plaster. Add HI-LITE Acoustical Plaster to clean water and mix until *MORTAR WEIGHS 15 TO 17 POUNDS NET PER 12-QUART PAIL.* (Approximately 10 to 15 minutes mixing time is required depending on speed of mixer.)

Do not retemper or mix one batch with another. Keep all tools and equipment clean. Mix no more than can be used in one hour.

Application

USG HI-LITE Acoustical Plaster shall be applied in two coats to a uniform thickness of ½". A full scratch and brown coat of gypsum plaster or portland cement plaster that has been cross-raked is required over metal lath, gypsum lath and masonry bases (except monolithic concrete) to provide proper rigidity, strength and a solid base for the acoustical plaster.

First Coat: Apply the first coat of HI-LITE Acoustical Plaster ⅜" thick, by scratching in firmly and immediately doubling back over a *set and dry, partially dry or semi-green* basecoat. Darby lightly to a level surface. Allow to set and dry fairly well (at least overnight) before applying finish coat.

Finish Coat: Apply the finish coat ⅛" thick, to a set and fairly dry HI-LITE first coat, scratching in and immediately doubling back, leaving surface free of trowel marks. Work from a wet edge to avoid joinings.

When surface gloss has disappeared or surface is crisp and hard enough to give clean perforations, stipple the surface with a rice root stippling brush to a uniform texture.

To obtain a stipple-perforated finish, perforate the surface not sooner than 30 minutes after stippling but before set (or when surface is hard enough to give clean perforations without tearing). Use perforator as furnished by the U.S. Gypsum Company. Perforations should number approximately 500 per square foot and should be at least 3/16" deep.

RED TOP AUDICOTE ACOUSTICAL PLASTER

Surface Preparation

Surfaces to receive AUDICOTE must be firm, clean, and free from oily film or water soluble materials.

Raw surfaces or edges of steel in contact with Audicote shall be galvanized or primed with rust inhibitive paint. Raw edges shall be similarly primed. In reinforced concrete slabs, ends of bar chairs shall be treated to prevent rusting and other raw steel in the exposed surfaces shall be held to a minimum. (See related inclusion of specifications for concrete.) For best results, base coats of gypsum plaster or portland cement plaster should be semi-green to dry.

Related inclusion (for concrete specifications):

Where AUDICOTE is specified to be applied direct to monolithic concrete, low reinforcing bar chair legs shall be galvanized with ends turned up and high reinforcing bar chair legs shall be dipped in rust inhibitive paint. Other raw steel in the exposed surface of the concrete shall be held to a minimum.

Mixing

Machine Mixing—Machine mixing is recommended. Add AUDICOTE to the water. Use approximately 55 quarts of clean water per bag for the first coat of acoustical plaster. For machine application of the finish coat more water will be required, 70 to 90 quarts, depending upon the type of machine used and the degree of texture desired. An increase in the amount of water used per bag will give a finer texture when machine applied. If hand application of the finish coat is required use approximately 55 quarts of water per bag for the finish coat. Each bag will cover 7 to 8 square yards ½" thick. Mix for a minimum of five minutes in the mixer to develop the proper consistency.

Hand Mixing—If hand mixing is required the material must be hoed sufficiently to develop even consistency free of humps.

Machine Application—The first coat of acoustical plaster should be applied to a thickness of ⅜". Level with a darby and point up with a trowel, if necessary, to provide a smooth and level base for the finish coat. Allow to dry before applying finish coat. Apply finish coat ⅛" thick.

Hand Application—Apply first coat of acoustical plaster by firmly scratching in ⅛" and immediately doubling back to full thickness of ⅜". Level with a darby to provide a smooth and level base for the finish coat. Allow to dry before proceeding with the finish coat. Apply finish coat by scratching in and immediately doubling back to ⅛" thickness. After finish coat has taken up sufficiently, it may be stippled, stipple-perforated, floated, darbied or trowelled to produce the desired finish.

Caution

Allow RED TOP AUDICOTE Acoustical Plaster to dry naturally, furnishing proper heat and ventilation in slow drying weather. Avoid fast or uneven drying which would result in excessive fissuring. Large fissures should be filled and leveled prior to application of the finish coat.

PAINTING ACOUSTICAL PLASTERS

Surface Preparation

Remove all loose dirt or dust by use of a vacuum cleaner with hose and brush attachment.

Paint: Should be water-thinned. TEXOLITE* (Standard or Imperial) is recommended. First coat—mix one part TEXOLITE paste to one part water by volume. Second coat if required—mix one part TEXOLITE paste to two parts water by volume.

Spray on with any gun with a medium fine spray. DeVilbiss spray gun, type MBD, with a No. 30 nozzle or equivalent is recommended. Use 30 to 40 lbs. pressure in the gun and 20 to 30 lbs. on the paint.

Hold nozzle 14 to 18 in. away from work. Use a slow, uniform motion. Cover surface in one pass. Do not pass over same area several times as this builds up paint unnecessarily.

Allow at least overnight drying between coats. If weather is extremely humid, allow additional drying as necessary.

NOTE: Brush painting is not recommended.

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*T. M. Reg. U. S. Pat. Off.

A.I.A. File 4-L

TECHNICAL INFORMATION

PYROFILL* GYPSUM CONCRETE ROOF DECKS

UNITED STATES GYPSUM

1959

*T.M. Reg. U.S. Pat. Off.

UNITED STATES GYPSUM

A.I.A. File 4-L

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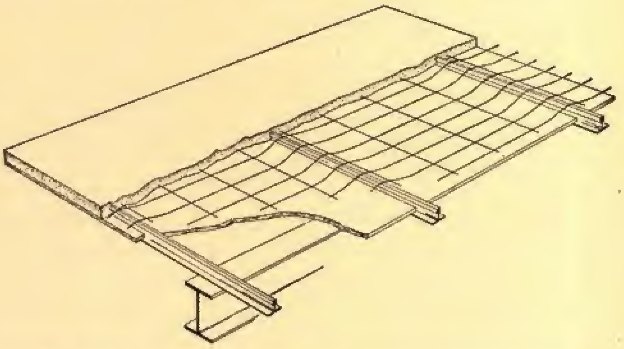
*T.M. Reg. U.S. Pat. Off.

. . . POURED GYPSUM DECK



PYROFILL* roof decks consist of incombustible, reinforced gypsum concrete slabs poured in place over permanent formboards by experienced USG Gypsum Roof Deck Contractors. The selection of formboards offered with PYROFILL decks provide high acoustical, insulating, and light reflecting properties without additional ceiling finish. An all-weather construction, PYROFILL decks have proven their strength and durability during 50 years of acceptance.

GYPSUM DECK

FORMBOARDS FOR REINFORCED PYROFILL GYPSUM CONCRETE

CHARACTERISTICS	SHEETROCK	STANDARD PYROFORM	USG ACOUSTICAL	USG INSULATION	ASBESTOS CEMENT
Thickness, in.	½	1	1	1	¼
Sizes width, in.	32 or 48	24 or 32	12	32 or 48	32
length	As required 12'-0" max.	As required 8'-0" max.	24 in.	As required 12'-0" max.	48 in.
Weight psf	2.05	1.30	1.20	1.45	2.44
Thermal Conductance (K value)	1.43	.24	.38	.33	2.70
Noise Reduction Coefficient	—	.75	.65	.35††	—
Light Reflectivity (Unpainted)	66%	50-60%	78%	55%†††	40%
Incombustible	Yes	Yes	No.†	No.†	Yes
Installation Service	Yes	Yes	Yes	Yes	Yes

†USG Insulation PYROFILL and USG Acoustical PYROFILL Decks are usually classed as incombustible with a deficiency penalty when combustible formboard is used.
††Mill primed USG Insulation Formboard—25%.
†††Mill primed USG Insulation Formboard—78%.

"USG", "PYROFILL", "PYROFORM" and "SHEETROCK" are registered trademarks owned by United States Gypsum, used by it to distinguish its products. "USG" identifies the particular formboard, "PYROFILL" identifies the particular gypsum concrete, "PYROFORM" and "SHEETROCK" identify the particular formboard manufactured by United States Gypsum Company.

DESCRIPTION

PYROFILL Roof Decks consist of incombustible, reinforced gypsum concrete slabs poured in place over permanent formboards. The selection of formboards offered with PYROFILL decks provide high acoustical, insulating, and light reflecting properties without additional ceiling finish.

FUNCTION AND UTILITY

Lightweight—The weights of PYROFILL deck constructions including sub-purlins are approximately as follows:

SHEETROCK PYROFILL	11.5 lb/sq ft
PYROFORM PYROFILL	10.9 lb/sq ft
USG Insulation PYROFILL	11.0 lb/sq ft
USG Acoustical PYROFILL	10.8 lb/sq ft
Asbestos Board PYROFILL	13.1 lb/sq ft

Strong—In tests by nationally recognized laboratories, a continuous 2″ Reinforced PYROFILL slab and permanent formboards over supports spaced 32⅝″ on centers carried a total load equivalent to more than 450 lbs. per sq. ft. when thoroughly wet, and over 700 lbs. per sq. ft. when dry.

Incombustible—Underwriters' Laboratories, Inc., Test Report R3796 dated January 31, 1956 shows a poured gypsum concrete deck withstood 82 minutes of fire exposure, with temperatures up to 1700° F., without failure. SHEETROCK PYROFILL, PYROFORM PYROFILL and Asbestos Board PYROFILL decks will not burn. USG Insulation PYROFILL and USG Acoustical PYROFILL Decks are usually classed as incombustible with a deficiency penalty when combustible formboard is used.

Durable—Gypsum is chemically inert and will not rot, burn or decay. Reinforced PYROFILL slabs have been in use for half a century and are still in excellent condition. Reinforced PYROFILL roof deck constructions are thoroughly proven by the test of time. Alterations can be made freely, as the slab can be cut and patched easily and quickly, with a minimum of expense.

Appearance—The permanent formboards provide a smooth, light colored ceiling of good-looking paneled surfaces. See "Decorating," page 5.

Speed of Erection—No other monolithic type of poured concrete roof deck can be installed faster. PYROFILL sets quickly (within 30 minutes), permitting workmen to work on previously poured sections in pouring new sections. Up to 30,000 sq. ft. of roof area have been poured in one day.

All Weather Construction—These roof decks can be installed during the coldest weather in which men normally work. Sufficient heat within the gypsum is generated to prevent freezing during the set. See "Exposure," "Drying" and "Venting of Enclosed Spaces," Page 5.

Adaptability—Reinforced PYROFILL slabs may be installed on flat, warped, saw tooth, curved or pitched roof framing.

Seismic Loads—PYROFILL roof decks meet requirements for resistance to seismic forces as established by the Uniform Building Code (Pacific Coast Building Officials Conference), California State Division of Architecture, and the building codes of the City of Los Angeles and the County of Los Angeles. Information and design details to meet these requirements are available on request.

Low Cost—The simplicity of design, light weight, and speed of erection combined with its other outstanding qualities of rigidity, fire resistance, and finished undersurface make the overall cost of this construction very economical.

DESIGN

Reinforced PYROFILL slabs (2″ of reinforced PYROFILL poured over permanent formboards) are designed to span continuously over sub-purlins.

Steel Sub-Purlins vary in size, weight and shape and are selected according to required span and loading. They provide anchorage of the deck against uplift, and restrict movement of the deck due to temperature change. Sub-purlins are spaced to accommodate 24″, 32″ or 48″ formboard widths with a slight tolerance for ease of formboard placement. When 48″ wide formboard is used with light sub-purlin sections, supporting steel spacing should not exceed 36″ on center.

Slab Reinforcement for PYROFILL ROOF DECKS is a BD 1214 galvanized wire mat with 12 gauge wires placed perpendicular to sub-purlins. When bulb tees are placed on 48⅝″ centers over bar joists on 36″ centers or less, 12 gauge wires are run perpendicular to the bar joists.

PYROFILL, a mill mixed gypsum concrete composed of calcined gypsum and wood chips, shavings or fibers, requires the job site addition of water only. It is poured in place over the formboards to an average thickness of not less than 2″.

REFERENCE: Complies with ASA—A59.1—1954 and ASTM C317—55.

INSTALLATION

Reinforced PYROFILL roof decks are installed by experienced U.S.G. Gypsum Roof Deck Contractors who are located conveniently in all parts of the U.S.A. This service insures the best in workmanship, quality and safety. Consult your USG representative for contractors serving your area.

PYROFILL

GYPSUM ROOF DECKS

FORMBOARDS

SHEETROCK Formboard is a rigid type gypsum board, ½ in. thick by 32 in. wide (or 48 in. wide), and made to specified lengths to fit purlin spacings. Treated to resist mildew effectively where adequate ventilation is provided. REFERENCE: Federal Specification SS-W-51a, Type A, and ASTM C318-55.

PYROFORM Mineral Fiber Formboard is a rigid, incombustible, insulative, acoustical formboard. Supplemental tees are required to support exposed end joints when they are not supported by the sub-structure. See page 6 for complete information.

USG Insulation Formboard is a rigid type natural color wood fiber insulation board 1 and ¾″ thick, 32 in. wide (or 48 in. wide). and cut to specified lengths to fit purlin spacings. Treated to resist mildew effectively where adequate ventilation is provided.

LIMITATIONS OF USE. Painted Acoustical Formboard (Page 7), also apply to Mill Primed Insulation Formboard.

REFERENCE: Federal Specification LLL-F-321b.

USG Acoustical Formboard is a rigid type wood fiber insulation board having a slotted or perforated acoustical surface shop painted white. It is 1″ x 12″ x 24″ in size and is treated to resist mildew effectively where adequate ventilation is provided. See page 7 for complete information.

Asbestos-cement Formboard is a rigid industrial type asbestos cement board, ¼ in. thick, cut to 32 in. wide by 48 in. long. Supplemental tees are required to support exposed end joints when they are not supported by the sub-structure. REFERENCE: Federal Specification SS-S-283a, Type F or U.

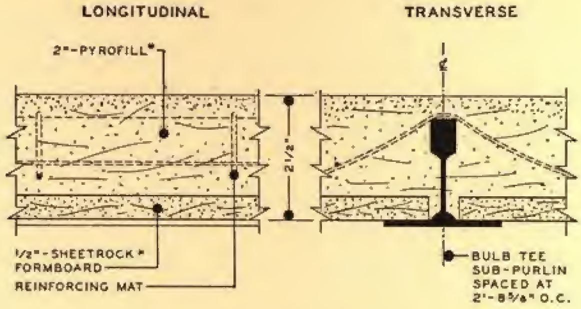
NOTE: Asbestos-cement formboard is not manufactured by U.S.G.

SLAB REINFORCEMENT

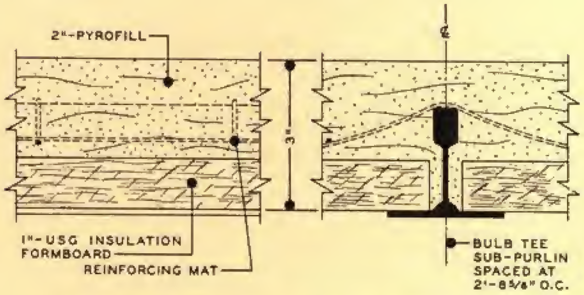
Steel Reinforcing for PYROFILL slabs is a welded type galvanized wire mat consisting of No. 12 gauge longitudinal wires spaced 4 in. on centers and No. 14 gauge transverse wires spaced 8 in. on centers—usually referred to as BD 1214 mat. The effective cross sectional area per foot width of slab (No. 12 gauge wires) is 0.026 sq in. Other comparable types of galvanized mat may be used if their effective cross sectional area is equal to or greater than BD 1214 mat, and if they will give adequate bond.

NOTE: Galvanized reinforcing mats are not manufactured or sold by U.S.G.

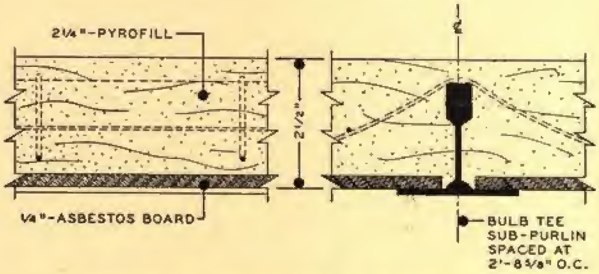
SCALE 3″ = 1′-0″



SHEETROCK PYROFILL


2″-PYROFILL
3″
℄
1″-USG INSULATION FORMBOARD
REINFORCING MAT
BULB TEE SUB-PURLIN SPACED AT 2′-8⅝″ O.C.

USG INSULATION PYROFILL



ASBESTOS CEMENT PYROFILL

ACOUSTICAL AND LIGHT REFLECTING PROPERTIES

Formboard	Thickness	Noise Reduction Coefficient	Light Reflection Coefficient
SHEETROCK	½″	—	66%
PYROFORM	1″	.75	50–60%
Insulation	1″	.35	55%*
Acoustical	1″	.65	78%
Cement-asbestos	¼″	—	40%

*Mill-primed—78%

RECOMMENDATIONS AND LIMITATIONS OF USE

Excessive Moisture or Temperature—PYROFILL roof decks are suitable for all types of buildings and occupancy with normal temperature and humidity conditions. Where intermittent very high temperatures occur, it is advisable to use cement-asbestos board PYROFILL roof decks. Where abnormally high humidity conditions prevail, such as in wet process plants, or where unusually high temperatures prevail such as in foundries, over breechings, in furnace rooms, etc., consult your USG representative for recommendations.

Exposure—During application, PYROFILL roof decks withstand the effects of normal rainfall, snow, freezing and thawing; however, they should be covered as soon as practicable. The water-proof (built-up type) roof covering should be applied as soon as the top surface of the slab is reasonably dry; i.e., when there is no visible moisture gloss. For the application of built-up roof covering, we recommend that the first 2 plies of the felt be nailed. We suggest a 5d or 6d square cut nail through a metal roofing cap. See table of nail holding values on page 8.

Drying—PYROFILL roof slabs dry out from the underside (through the formboard). Adequate heat and ventilation below the slab are required to permit the escape of this moisture. In buildings without windows or with fixed windows adequate mechanical (forced) ventilation is required to remove all construction moisture. PYROFILL is not recommended as a fill over concrete slabs, steel decks, and other decks of low permeability. Consult your USG representative if unusual conditions prevail.

Ventilating of Enclosed Spaces—The underside of a PYROFILL Deck should not be enclosed by a ceiling before the deck is dry. The enclosed space should always be vented to the outside. Such venting by small louvers or openings does not appreciably affect attic temperatures. Please refer to *Heating, Ventilating, Air Conditioning Guide*, published annually by the American Society of Heating and Air Conditioning Engineers for complete information on venting of attic spaces (Chapters 10 & 12).

Acids—Acid fumes generally are not harmful to gypsum although they may be harmful to framing materials. If acid fumes are considered a problem, consult your USG representative.

Heavy Loads—Although the reinforced PYROFILL slab will carry loads in excess of 100 lbs. per sq. ft. with adequate factors of safety, the sub-purlins or bar joists govern the safe load limit. All superimposed concentrated loads, such as flag pole bases, water tanks and ventilating fans, must be directly or indirectly supported on steel framing, not on the gypsum slab.

Steep Roofs—PYROFILL roof slabs are designed to receive built-up roof coverings. On steep roofs, where slate, ceramic tile or rigid type shingle roof coverings are required, the use of USG METAL EDGE GYPSUM PLANK is recommended. See page 8 for PYROFILL nail holding data.

Expansion and Contraction—PYROFILL Roof Decks, like all roof decks, are subject to expansion and contraction due to temperature changes. Bulb tees welded to steel framing limit slab movement that would exert itself at right angles to the direction of the bulb tees. The following is suggested as a guide:

1. Provide expansion joints in the deck and the roofing wherever they are provided in the main structure.
2. Long narrow buildings should have expansion joints through the deck and the supporting structure spaced not more than 200 ft. apart.
3. Separate wings of "L," "U" and "T" shaped buildings with expansion joints.
4. A mineral fiber (PYROFORM) filler strip should be installed between all junctures of roof slabs with parapet walls, stacks, etc. See details on pages 11 and 12.

To enable you to resolve specific problems the coefficient of linear expansion of gypsum concrete is .0000085 inch per °F. See *Steel Construction*, Manual of the A.I.S.C., for method of calculating expansion of bodies by heat.

Decorating—PYROFILL Roof Decks do not generally require further decorating, as the formboards provide a presentable undersurface. When decoration is desired, painting should not be done until the slab is thoroughly dry. Before painting, the slab should be checked for dryness throughout its entire thickness. An electric type moisture meter can be used if contacts are driven well into interior of slab. Casien or Resin emulsion paints give best results. Exposed metal, such as sub purlin flanges, should be protected with a suitable metal primer before finish coats are applied.

All finish coats must be treated to effectively resist mildew.

Suspended Ceilings—Suspended ceilings under PYROFILL roof decks should be hung from the structural steel frame. If they are hung from the roof deck, the hangers should be attached to the sub-purlins, never to the gypsum slab alone. When hung from the sub-purlins, the sub-purlins must be capable of supporting the total weight including ceiling with a deflection not to exceed 1/360 of their span. See selection table on page 9 for load values of various sub-purlins.

Uplift—During hurricanes or high winds all roof decks are subject to uplift forces. Therefore, roof decks should be anchored to supports to resist this uplift. In developing adequate resistance, the total dead load of the roof deck can be considered as part of the total resistance. In laboratory tests, PYROFILL roof decks, using steel rails or bulb tee sub-purlins welded to the steel framing, have an average uplift resistance equivalent to more than 125 lbs. per sq. ft. Slabs with standard tee or flanged channel (fence post sections) sub-purlins and slabs over bar-joist should have supplemental anchorage to develop the required uplift resistance.

REFERENCE: Armour Research Foundation Test M1068.

PYROFILL

GYPSUM ROOF DECKS

DESCRIPTION PYROFORM FORMBOARD

PYROFORM Mineral Fiber Formboard was designed specifically as a formboard for PYROFILL Decks, and provides the strength and rigidity required for this use. PYROFORM Formboard, together with PYROFILL, the original gypsum concrete, provides a sturdy, incombustible roof deck with high insulation and acoustical values.

PYROFORM is available in these styles:

Economy—for use where formboard will not be exposed.

Standard—with membrane, for use where acoustical value and medium light reflectivity is desired.

Caution: The surface appearance of standard PYROFORM may not be acceptable on low ceilings when a finished surface is required.

FUNCTION AND UTILITY

Acoustical Ceiling—Standard PYROFORM may be left exposed as an acoustical ceiling with high sound absorption. See Table at right.

Paintable—Meets requirements of Federal Specifications SS-A-118b. It may be decorated by spray paint without appreciable loss in acoustical absorption. The deck should be thoroughly dry before painting. See "DECORATION" on Page 5.

Incombustible—PYROFORM has been tested by Underwriters' Laboratories, Inc. in accordance with ASTM E84-50T and is listed with a 0-5 flame spread classification. PYROFORM also qualifies under Class A (incombustible) of Federal Specification SS-A-118b.

Insulative—PYROFORM leads all formboards in thermal efficiency. Average thermal conductance ("C" value) at a nominal 1" thickness is .24 btu/sq. ft./°F. See table at right for U-factor values.

Sizes—PYROFORM, in 1", 1¼", 1½", 1¾", and 2" thicknesses, is available in the following widths and lengths to fit job requirements:

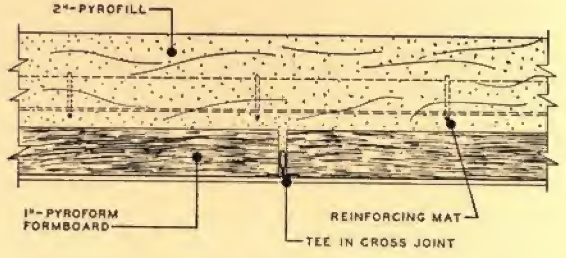
32 in. wide, 48 in. long
32 in. wide, 42 in. through 47¾ in. long, in ¼ in. increments.
24 in. wide, 36 in. through 96 in. long, in ¼ in. increments.

LIMITATIONS OF USE

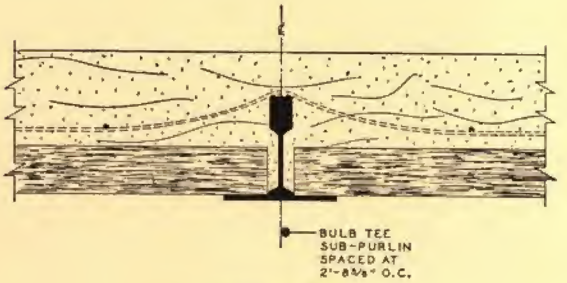
PYROFORM Mineral Fiber Formboard should always be stored in a dry place. The normal moisture from a PYROFILL slab has no effect on the performance of PYROFORM. Soaking of the formboard prior to the pouring of the slab can result in excessive deflection. The roof covering should be applied as soon as possible after erection to protect the construction from precipitation.

SCALE 3" = 1'-0"

PYROFORM PYROFILL



LONGITUDINAL



TRANSVERSE

PYROFORM SOUND ABSORPTION COEFFICIENTS
(Riverbank Laboratories Test No. A 55-53)

Type	Thickness	Mounting	Coefficients						NRC
			125	250	500	1000	2000	4000	
Membrane Faced	1"	#4	.08	.36	.84	.90	.93	.91	.75

THERMAL INSULATION VALUES: PYROFORM-PYROFILL ROOF DECKS
(Including roofing—supporting steel not included)

Description of Construction	U Factor
Exposed underside, no added insulation	.16
Exposed underside, plus 1" roof insulation	.11
Vented air space and ¾" plaster ceiling beneath, no added insulation	.13

DESCRIPTION ACOUSTICAL FORMBOARD

USG Acoustical Formboard is a rigid type wood fiber insulation board with a slotted, perforated, or random perforated acoustical surface, shop painted white. Both board and paint are treated to resist mildew effectively where adequate ventilation is provided.
The 1 in. x 12 in. x 24 in. units are erected on bulb tees spaced 24⅝ in. on center. Used with a 2-in. reinforced PYROFILL gypsum concrete slab, USG Acoustical Formboard provides a rigid, paintable, insulation roof deck with excellent acoustical properties.

FUNCTION AND UTILITY

High Acoustical Absorption—Noise reduction coefficient (NRC) = .65 for no. 4 mounting.

High Light Reflectivity—78%.

Excellent Appearance—Hi-Lite finish (shop painted white).

Lightweight—USG Acoustical Formboard weighs but 1.2 lbs. per sq. ft.

Insulative—"K" factor for 1" Acoustical Formboard is 0.38. See table on page 8 for comparative U factors.

Paintable—Brush paintable without loss of noise reduction efficiency. The deck should be thoroughly dry before painting.

Economy—Considerably lower in cost than regular deck construction plus separate acoustical treatment.

INSTALLATION

The installation method used for USG Acoustical PYROFILL Roof Deck is basically the same as for other PYROFILL constructions.

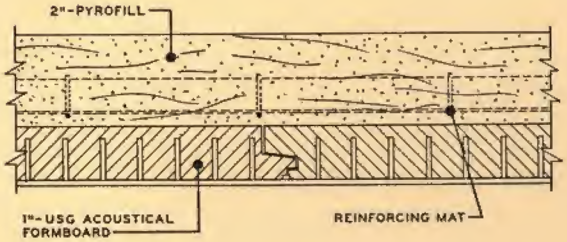
Sub-purlins are spaced 24⅝" on center, so this closer spacing permits greater loads than the sub-purlin load table indicates on page 9. To determine the load carrying capacity for any sub-purlin shown in this table multiply the tabulated load shown by 1.327. For example, a tabulated load of 35 psf would become 46 psf.

LIMITATIONS OF USE

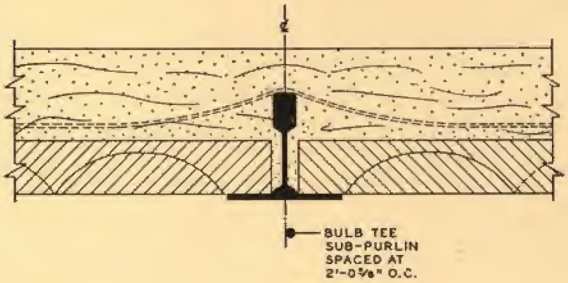
USG Acoustical Formboard, shop painted white, is susceptible to water staining. United States Gypsum cannot assume responsibility for such staining. If staining occurs, the board may be field painted after the slab is dry.

SCALE 3" = 1'-0"

USG ACOUSTICAL PYROFILL



LONGITUDINAL



TRANSVERSE

USG ACOUSTICAL FORMBOARD SOUND ABSORPTION COEFFICIENTS

Riverbank Laboratories Test No. A52-25

Type	Thickness	Mounting	Coefficients						NRC
			125	250	500	1000	2000	4000	
Slotted	1"	#4	.18	.37	.56	.77	.83	.74	.65

THERMAL INSULATION VALUES: USG ACOUSTICAL-PYROFILL ROOF DECKS

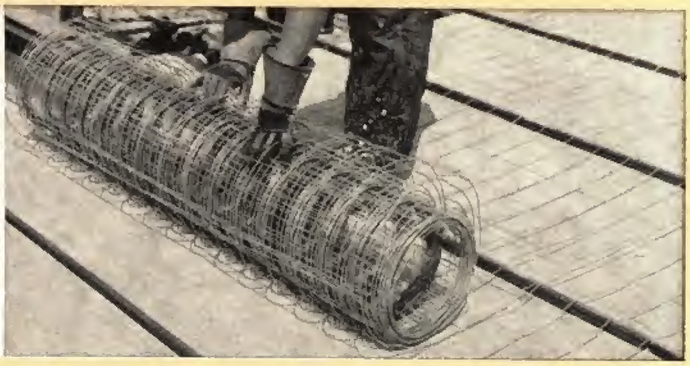
(Including roofing—supporting steel not included)

Description of Construction	U Factor
Exposed underside, no added insulation	.20
Exposed underside, plus ½" roof insulation	.16
Exposed underside, plus 1" roof insulation	.13

SLAB WEIGHTS AND THERMAL INSULATION VALUES

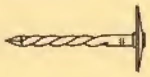
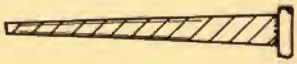
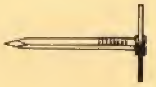
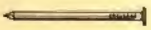
	Approx. Slab Weight per Square Foot	(Btu per sq. ft., per hr., per deg. F. diff. in temperature) "U" Factor for complete roof slab including built-up roof covering (supporting steel not included)		
		No Insulation	½" Insulation	1" Insulation
2½" SHEETROCK PYROFILL ROOF SLAB 2" PYROFILL Over ½" SHEETROCK	10.7	0.38	0.24	0.18
3" PYROFORM PYROFILL ROOF SLAB 2" PYROFILL OVER 1" PYROFORM	10.0	0.16	0.13	0.11
3" U.S.G. INSULATION PYROFILL ROOF SLAB 2" PYROFILL Over 1" U.S.G. INSULATION FORMBOARD	10.1	0.19	0.15	0.12
3" U.S.G. ACOUSTICAL PYROFILL ROOF SLAB 2" PYROFILL Over 1" ACOUSTICAL FORMBOARD	9.9	0.20	0.16	0.13
2½" Asbestos Board PYROFILL ROOF SLAB 2¼" PYROFILL Over ¼" Asbestos Board	12.2	0.39	0.25	0.19

NOTES:
1. For total weight of roof deck add weight of sub-purlins to the approx. slab weights shown above.
2. The component materials weigh approximately: PYROFILL 52 lbs. cu. ft. ½" SHEETROCK 2.05 lbs. sq. ft. PYROFORM 1.3 lbs. sq. ft. 1" U. S. G. Insulation Formboard 1.45 lbs. per sq. ft. (1" U. S. G. ACOUSTICAL FORMBOARD 1.2 lbs. sq. ft.) ¼" Asbestos board 2.44 lbs. per sq. ft.



NAIL HOLDING POWER

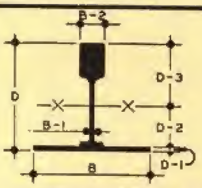
Resistance to direct pull in pounds per nail for penetration shown

Type of nail	Screw-Tite Squarehed**	La Belle Square Cut Nails (Wheeling)		Gypsum Deck Nails*		Wire Nails
		6-Penny Common	6-Penny Cornice	1½"	1¾"	7-Penny Common
Finish	Plain	Plain or Galv.	Plain or Galv.	Plain	Plain	Plain
Head dimension	1⁵⁄₁₆" square	.27"x.21"	.34"x.28"	dia. .975"	dia. .975"	¼" Round
Shank at head	.125"	.19"x.114"	.23"x.14"	.152"x.103"	.197"x.125"	11.5 Ga.
Shank at point	.125"	.10"x.07"	.13"x.08"	.092"x.071"	.125"x.115"	11.5 Ga.
Details and Lengths						
	1¾"	2"	2"			2¼"
Penetration	1½"	1.75"	1.75"	1.25"	1.50"	2.0"
Holding power Wet	46.5	26.5	34.0	14.5	28.0	—
in PYROFILL Dry	62.0	226.0	180.0	116.0	181.0	28.0

NOTES:
1. Values shown are from tests conducted by USG Research Laboratory.
2. Nails were driven by hand with a hammer and withdrawn immediately by means of a weighted lever arm.
3. The dry density of the PYROFILL was approximately 52 pounds per cu. ft.
4. Other nails of the same shank size and penetration should give equal holding power.

* Manufactured by Crescent Brass & Pin Co., Detroit.
** Manufactured by Independent Nail & Packing Co., Bridgewater, Mass.

SUB-PURLIN PROPERTIES AND DIMENSIONS



BULB TEE

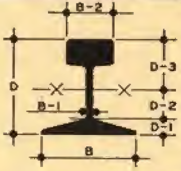
TYPE	Wt. Lbs. Ft.	I in 4	S in 3	B inches	B^1 inches	B^2 inches	D inches	D^1 in.	D^2 in.	D^3 inches
1480 Bulb. T. (B)	1.55	0.146	0.173	1.5000	0.100	0.4375	1.5000	0.100	0.558	0.8420
3158 Bulb. T. (W)	1.50	0.160	0.161	1.4375	0.109+	0.3125	1.6875	0.109	0.582	0.9965
158 Bulb. T. (I)	1.50	0.162	0.165	1.5625	0.109+	0.3750	1.6250	0.109	0.532	0.9840
1680 Bulb. T. (B)	2.00	0.251	0.261	1.6250	0.120	0.5000	1.7500	0.120	0.650	0.9800
168 Bulb. T. (I)	2.00	0.247	0.240	1.6250	0.125	0.4370	1.7500	0.132	0.590	1.0280
3168 Bulb. T. (W)	2.00	0.247	0.240	1.6250	0.125	0.4375	1.7500	0.132	0.590	1.0280
3178 Bulb. T. (W)	2.47	0.397	0.324	2.0000	0.141	0.5000	2.0000	0.141	0.635	1.2240
1780 Bulb. T. (B)	2.40	0.348	0.332	1.8750	0.125	0.5625	1.8750	0.125	0.701	1.0490
178 Bulb. T. (I)	2.50	0.364	0.340	1.9000	0.140	0.5620	1.8750	0.140	0.665	1.0700
200 Bulb. T. (I)	3.00	0.503	0.460	2.0630	0.140	0.6560	2.0000	0.140	0.768	1.0920
2025 Bulb. T. (B)	3.00	0.512	0.464	2.2500	0.125	0.6875	2.0000	0.125	0.897	1.1030
3218 Bulb. T. (W)	3.01	0.561	0.472	2.0625	0.140	0.5940	2.1250	0.140	0.795	1.1900
218 Bulb. T. (I)	3.00	0.598	0.520	2.1250	0.125	0.6875	2.1250	0.140	0.975	1.1500
2180 Bulb. T. (B)	3.05	0.621	0.520	2.2500	0.125	0.7500	2.1250	0.125	0.827	1.1730
214 Bulb. T. (B)	3.20	0.671	0.494	2.3750	0.141	0.6250	2.2500	0.109	0.783	1.3580
2140 Bulb. T. (B)	3.65	0.852	0.738	2.1250	0.125	0.8750	2.3125	0.125	1.032	1.5600
3228 Bulb. T. (W)	3.65	0.852	0.738	2.0000	0.125	0.8750	2.3125	0.125	1.032	1.1560
3258 Bulb. T. (W)	4.67	1.370	1.050	2.2500	0.141	0.9375	2.6250	0.141	1.172	1.3125

(I) Inland Steel Company—38 S. Dearborn St., Chicago 3, Ill.

(B) Buffalo Steel Corp.—Tonawanda, N. Y.

(W) West Virginia Steel & Mfg. Co., Huntington, W. Va.

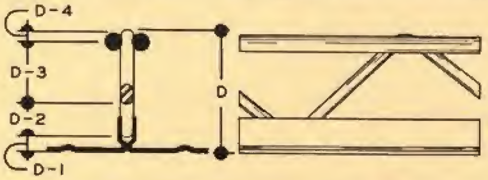
Note: All properties shown are taken from data furnished by manufacturers indicated above.



A.S.C.E..RAIL

TYPE	Wt. Ft.	I in. 4	S in. 3	B Inches	B^1 In.	B^2 Inches	D Inches	D^1 Inches	D^2 Inches	D^3 Inches
12 Lbs. PerYd. (W)	4.00	0 66	0.63	2.0000	—	1.0000	2.0000	0.3438	0.6162	1.0400
16 Lbs. PerYd.(W)(B)	5.33	1.24	1.01	2.3750	—	1.1718	2.3750	0.3750	0.7720	1.2280
20 Lbs. PerYd.(W)(B)	6.67	1.94	1.43	2.6250	—	1.3437	2.6250	0.4375	0.8305	1.3570
25 Lbs. PerYd. (W)	8.33	2.50	1.77	2.7500	—	1.5000	2.7500	0.4844	0.8532	1.4124

TRUSSED TEE (E)



SIZE	I in.⁴	S BTM	S TOP	D^1	D^2	D^3	D^4	2 Wires in.²	1 Wire in.²	2 Angles in.²
5-9-16 D=1¾"	.1123	.1919	.1057	.1694	.4157	1.0614	.1035	.0672	.0173	.1718
4-5-16 D=2"	.1860	.3054	.1454	.1307	.4779	1.2787	.1127	.0797	.0336	.2135
4-5-16 D=2½"	.3025	.4062	.1841	.1307	.6139	1.6427	.1127	.0797	.0336	.2135
1-5-16 D=2"	.2433	.3155	.2238	.1307	.6406	1.0872	.1415	.1258	.0336	.2135
1-5-16 D=2½"	.3999	.4180	.2853	.1307	.8260	1.4018	.1415	.1258	.0336	.2135
0-5-14 D=2"	.2861	.3833	.2601	.1409	.6057	1.1001	.1533	.1476	.0336	.2681
0-5-14 D=2½"	.4723	.5111	.3320	.1409	.7832	1.4226	.1533	.1476	.0336	.2681

(E) Edga Steel Products, Inc.—Olathe, Kansas

SUB-PURLINS FOR 2-INCH PYROFILL SLABS OVER FORMBOARDS

VALUES SHOWN ARE BASED ON properties determined by each sub-purlin manufacturer. Sub-purlins Spaced 2'8⅝" on Centers, fs @ 20.000 psi. M—1/10 WL except as noted
Exceptions to spacing and slab thickness are noted in the table.

SUB-PURLINS				SAFE TOTAL LOAD in pounds per sq. ft. uniformly distributed for spans of 3'0" to 12'0" in increments of 6 inches																			Maximum Eave Overhang (See Note 10)
TYPE	S in³	Weight Pounds Lin. Ft.	Weight Pounds Sq. Ft.	3'0"	3'6"	4'0"	4'6"	5'0"	5'6"	6'0"	6'6"	7'0"	7'6"	8'0"	8'6"	9'0"	9'6"	10'0"	10'6"	11'0"	11'6"	12'0"	
1480 Bulb-T (B)	.173	1.55	0.57	117	88	66	52	42	35														2'1"
3158-X Bulb-T (W)	.181	1.45	0.53	110	81	62	49	39	33														2'1"
158 Bulb-T (I)	.165	1.50	0.54	112	83	63	50	40	33														2'1"
168 Bulb-T (I)	.240	2.00	0.74		120	92	73	59	49	41	35	30											2'6"
3168 Bulb-T (W)	.240	2.00	0.74		120	92	73	59	49	41	35	30											2'7"
1680 Bulb-T (B)	.261	2.00	0.74			100	79	64	53	44	37	33											2'8"
3178 Bulb-T (W)	.324	2.47	0.91			124	98	79	66	55	47	41	35	3									2'11"
1780 Bulb-T (B)	.332	2.40	0.88			127	100	81	67	56	48	41	36	31									3'0"
178 Bulb-T (I)	.340	2.50	0.92			130	103	83	69	58	49	43	37	33									3'0"
200 Bulb-T (I)	.460	3.00	1.10				139	113	93	78	67	58	50	44	39	35	31						3'6"
2025 Bulb-T (B)	.484	3.00	1.10					114	94	79	67	58	51	44	39	35	31						3'6"
3218 Bulb-T (W)	.472	3.01	1.11					116	96	80	68	59	51	45	40	36	32						3'7"
214 Bulb-T (B)	.494	3.20	1.18					121	100	84	71	61	53	47	42	37	33	31					3'9"
2180 Bulb-T (B)	.520	3.05	1.12					127	104	88	75	64	56	49	43	39	35	32					3'9"
218 Bulb-T (I)	.520	3.00	1.10						105	89	75	65	57	50	44	39	35	32					3'9"
12-lb. Rail (W)	.630	4.00	1.47						128	107	91	79	69	59	53	*48	*42	*38	*34	*31			4'2"
2140 Bulb-T (B)	.738	3.65	1.33	Spacing 2'9"							101	92	80	70	63	58	50	45	41	37	34	31	4'5"
3228 Bulb-T (W)	.738	3.65	1.33	Spacing 2'9"							106	91	80	70	62	55	50	45	41	37	34	31	4'5"
16-lb. Rail (W) (B)	1.010	5.33	1.94	Spacing 2'9"								125	109	96	85	75	68	61	*55	*49	*45	*42	5'2"
3258 Bulb-T (W)	1.050	4.67	1.69	Min. Thickness = 3" Total—Spacing 2'9"								130	113	99	88	78	71	64	58	53	44	44	5'4"
20-lb. Rail (W) (B)	1.430	6.67	2.42	Min. Thickness = 3" Total—Spacing 2'9"										135	120	107	96	87	79	72	65	58	6'2"
25-lb. Rail (W)	1.770	8.33	3.03	Min. Thickness = 3¼" Total—Spacing 2'9"												132	119	107	97	89	81	75	6'11"

Notes: 1. Loads to left of heavy line have deflections less than 1/360 of span—To Right over 1/360 but less than 1/240 of span. 2. Loads marked * limited by deflection—deflection based on semi continuous spans or $D = \frac{006884wl^4}{EI}$

3. To determine total safe load for Bending Moment of ⅛ WL use 80% of the tabulated load. 4. To determine total safe load for a maximum fiber stress of 18,000 psi use 90% of tabulated load. 5. For suspended ceilings use loads shown to the left of the heavy line; or 75% of loads shown to right of the heavy line can generally be safely used. 6. The most economical spans are from 6'0" to 8'0"—Values for other sub-purlin spacings can be determined by direct ratio. 7. (I)Inland Steel Co. (B) Buffalo Steel Corp. (W) West Virginia Steel & Mfg. Co. 8. We do not recommend using design loads less than 35 pounds per sq. ft. These are indicated by light type. 9. For values of Acoustical slabs with 24⅝" spacing multiply values shown by 1.327. 10. Values shown are for a total load of 45 pounds per sq. ft. Bending moment "M" = ½ WL. Spaced as indicated.

VALUES SHOWN BELOW are on the basis of the Tee, Mesh, and Gypsum acting as a composite section; from data furnished by Edge Steel Products, Inc.

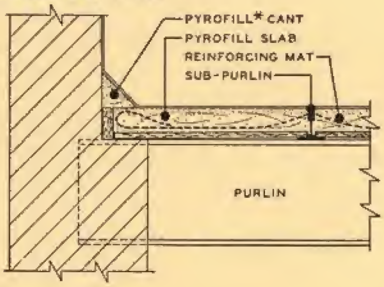
TRUSSED TEES		SAFE TOTAL LOAD in pounds per sq. ft. deflection less than 1/360 of span.*														Maximum Eaves Overhang
Type	Weight Pounds Lin. Ft.	3'0"	3'6"	4'0"	4'6"	5'0"	5'6"	6'0"	6'6"	7'0"	7'6"	8'0"	8'6"	9'0"	9'6"	
5-9-16 D=1¾"	.90		148	113	89	73	60									1'6"
4-5-16 D=2"	1.16					100	82	69	59	51						1'9"
4-5-16 D=2½"	1.16					127	105	88	75	65						1'9"
1-5-16 D=2"	1.32								74	64	56	49				2'0"
1-5-16 D=2½"	1.32								88	76	66	58				2'0"
0-5-14 D=2"	1.57										72	63	56	50	45	2'3"
0-5-14 D=2½"	1.57										80	70	62	56	50	2'3"

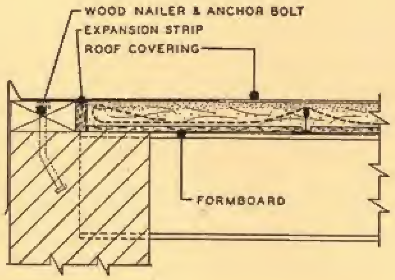
Safe load tables are based on uniformly distributed loads on 3 continuous spans and with Sub-Purlins spaced 32¾" O.C.
For Sub-Purlins spaced 24¾" O.C. multiply value by 1.325. The 2½" Trussed-Tee is recommended when formboard of 1" thickness is used.
*For tables showing deflections less than 1/240 consult Edge Steel Products, Inc. Technical Folder.

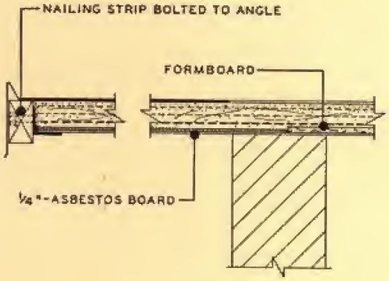
APPLICATION OVER BEAMS AND BAR JOISTS

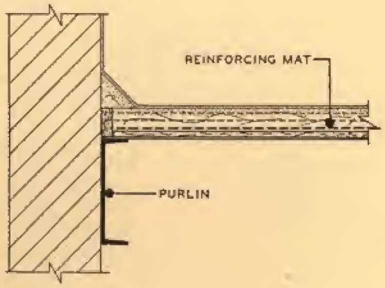
details **Scale ¾" = 1'-0"**

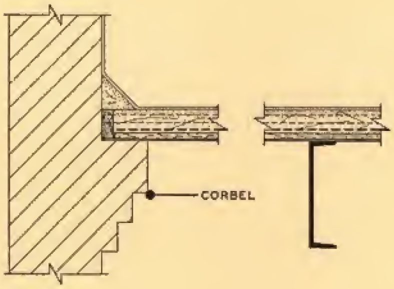
WALL DETAILS

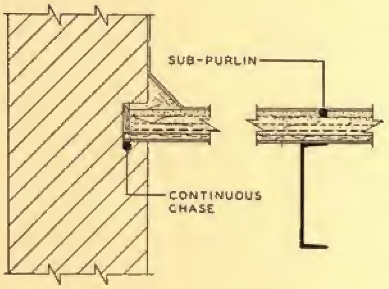




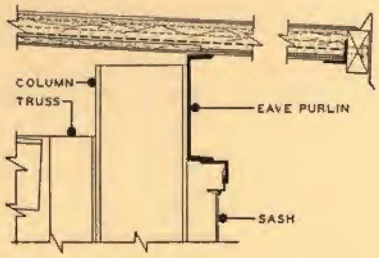


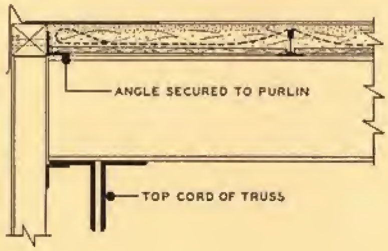


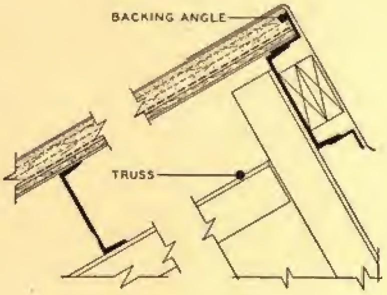




EAVES

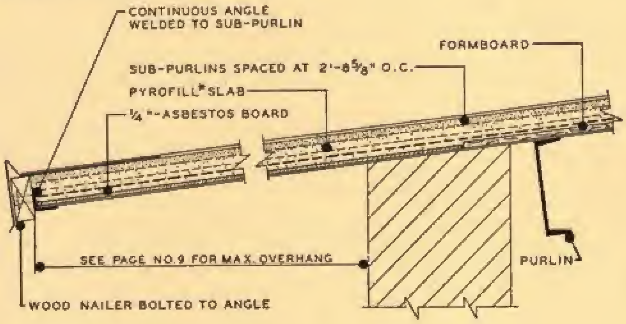


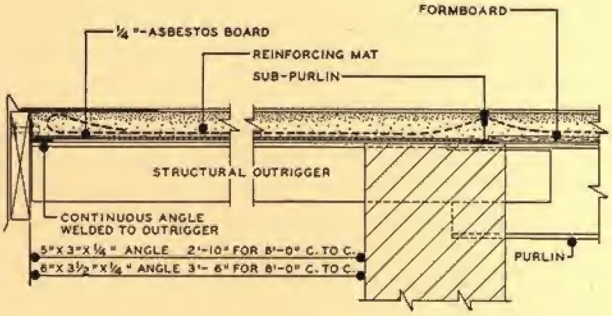




EAVE & GABLE OVERHANG

(OVERHANG BASED ON 45#/□' TOTAL LOAD)


CONTINUOUS ANGLE WELDED TO SUB-PURLIN
FORMBOARD
SUB-PURLINS SPACED AT 2'-8⅝" O.C.
PYROFILL* SLAB
¼"-ASBESTOS BOARD
SEE PAGE NO. 9 FOR MAX. OVERHANG
PURLIN
WOOD NAILER BOLTED TO ANGLE

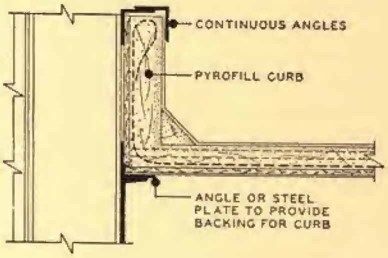

FORMBOARD
¼"-ASBESTOS BOARD
REINFORCING MAT
SUB-PURLIN
STRUCTURAL OUTRIGGER
CONTINUOUS ANGLE WELDED TO OUTRIGGER
5"X3"X¼" ANGLE 2'-10" FOR 8'-0" C. TO C.
8"X3½"X¼" ANGLE 3'-6" FOR 8'-0" C. TO C.
PURLIN

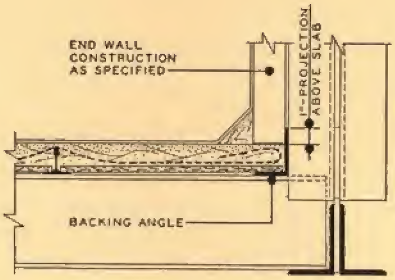
* T.M. REG. U.S. PAT. OFF.

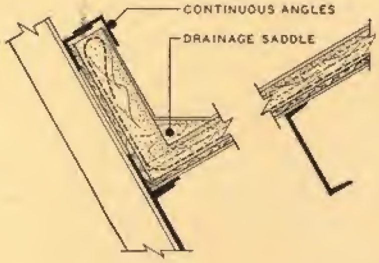
APPLICATION OVER BEAMS AND BAR JOISTS

details | **Scale ¾" = 1'-0"**

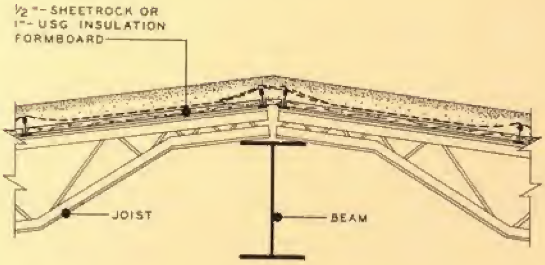
CURBS



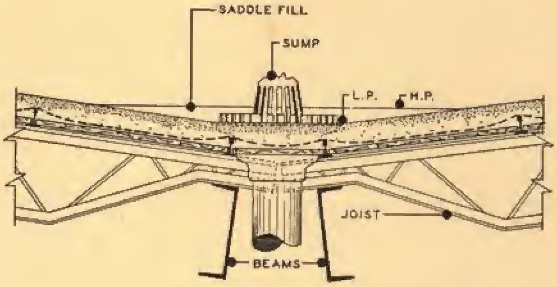




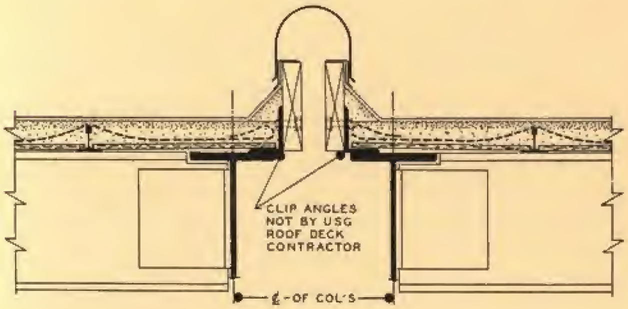
RIDGE DETAIL



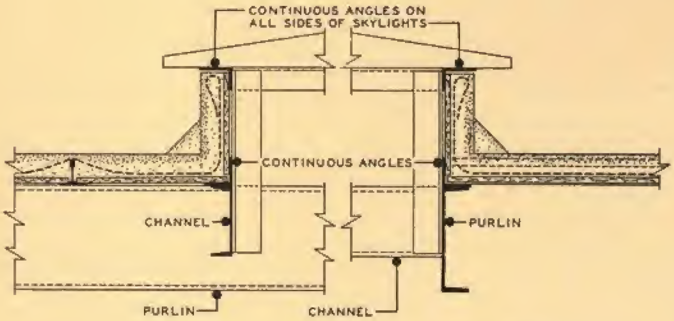
VALLEY DETAIL



EXPANSION JOINT

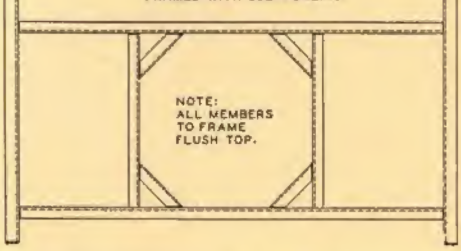


SKYLIGHT DETAIL

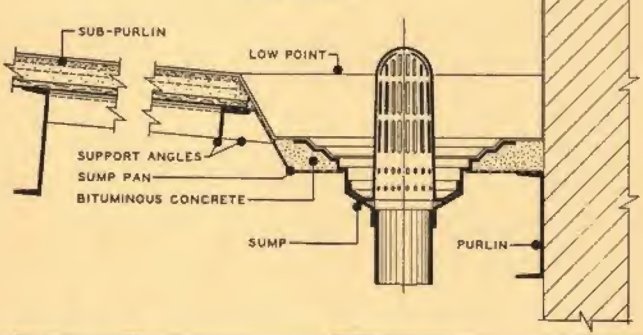


TYPICAL FRAMING AROUND OPENINGS LARGER THAN 30"

OPENINGS LESS THAN 30" TO BE FRAMED WITH SUB-PURLINS

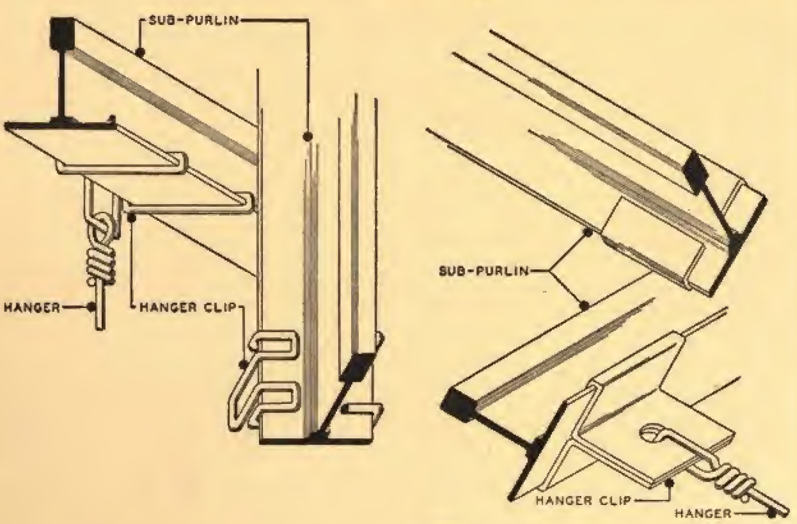


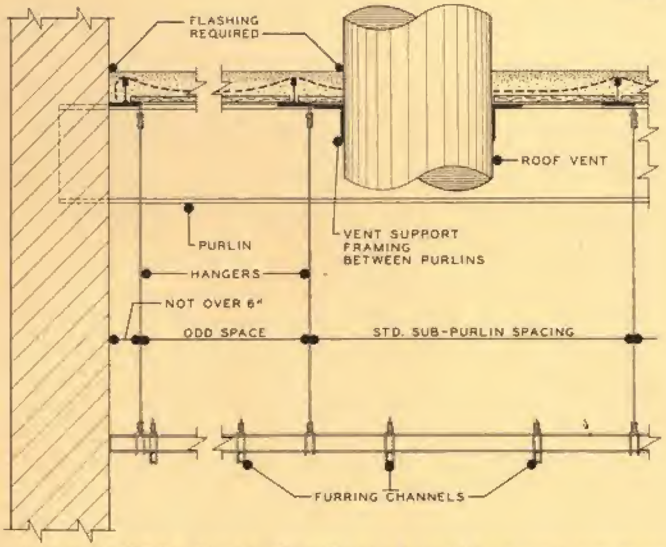
SUMP DETAIL



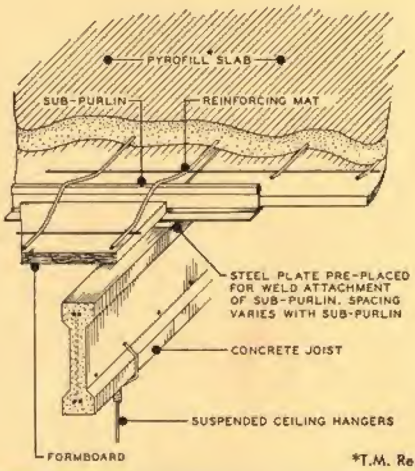
PYROFILL
GYPSUM ROOF DECKS

HANGER DETAILS





ATTACHMENTS HANGERS & CHANNEL GRILLAGE NOT BY USG* ROOF DECK CONTRACTOR
SUSPENDED CEILINGS
SCALE—¾"=1'0"


PYROFILL SLAB
SUB-PURLIN
REINFORCING MAT
STEEL PLATE PRE-PLACED FOR WELD ATTACHMENT OF SUB-PURLIN. SPACING VARIES WITH SUB-PURLIN
CONCRETE JOIST
SUSPENDED CEILING HANGERS
FORMBOARD

*T.M. Reg. U.S. Pat. Off.

SPECIFICATIONS

Scope of Work. The contractor shall furnish all labor, material, and equipment and install complete the poured gypsum roof decks, together with cants, curbs, and drainage fills as shown and specified. Approved shop drawings are required before work proceeds.

Materials. 1. Steel Sub-Purlins: Steel sub-purlins shall be an approved type capable of carrying the required dead load and live load, all to be cut to length and shop painted with one coat of an approved paint. All end joints are to bear on roof supports.

2. Formboards: Permanent formboards shall be (select as required):

a. USG ½" treated SHEETROCK formboard 32" wide, (for 48" see page 4: design) in lengths equal to main purlin spacings; provided, however, that where purlin spacings are 10 ft. or greater, formboard shall be one half the length of purlin spaces, with approved galvanized or painted tees to support cross-joints between sub-purlins.
b. PYROFORM Mineral Fiber Formboard (specify type) complete with galvanized or painted sheet metal tees to support end joints where not supported by the roof framing.
c. 1" or ¾" treated USG Insulation Formboard 32" wide, in lengths equal to main purlin spacings.
d. USG Acoustical Formboard, 1" x 12" x 24", for sub-purlins spaced 24⅝" on center.
e. Asbestos cement board ¼" x 32" x 48", complete with approved galvanized or painted sheet metal tees to support end joints where not supported by the roof framing.

3. Reinforcing Mesh: Reinforcement in the poured gypsum slab shall be a galvanized welded wire mesh having 1[illegible] gauge longitudinal wires spaced 4" on center, or equivalent type, having an effective cross sectional area of not less than 0.026 sq. in. per foot of slab width.

4. Gypsum Concrete: Gypsum concrete shall be USG PYROFILL consisting of calcined gypsum and not more than 12½ per cent by weight of wood chips, shavings, or fibers.

Installation. 1. Steel Sub-Purlins: Place and weld each sub-purlin to main purlins at each contact point, using fillet welds ½" minimum length placed on alternate sides of sub-purlins where accessible.

2. Formboards: Place formboards on sub-purlin flanges with all end or cross-joints supported, forms to fit neatly on all four edges. Cut forms to fit at walls, curbs, and openings as required.

3. Reinforcement: Place reinforcing mesh with 12 gauge wires at right angles to sub-purlins. Lap mesh ends at least 6 inches. Do not lap sides of mesh. Cut mesh to fit at walls, curbs, and openings, and carry mesh into all areas where PYROFILL is poured.

4. Gypsum concrete: Mix PYROFILL with clean water only, as directed on bags. Pour over formboards to average depth of at least 2 inches. Screed all surfaces to a smooth, even plane ready to receive waterproof roof covering specified in another section. Pour cants, curbs, and drainage fills as shown or required. After pouring, leave roof deck free and clean for other trades.

Notes To Architect. Expansion joints should also be provided in the roof deck if they are provided in the main structure.

Where resistance to uplift forces is required, the bulb tee, trussed tee, and ASCE type sub-purlins are most effective. Other types may require supplementary anchorage.

Where suspended ceilings are required, USG recommends that they be hung from the main purlins wherever economically feasible. If they are hung to the roof deck, the hangers should be attached to the sub-purlins, never to the gypsum slab itself. Added weight of suspended ceiling affects sub-purlin size.

A.I.A. File 23-L
37-A
37-B

TECHNICAL INFORMATION

USG® INSULATIONS

UNITED STATES GYPSUM
The Greatest Name in Building
General Offices: 300 West Adams St., Chicago 6, Ill.

1958

A.I.A. File 23-L
37-A
37-B

INSULATIONS

RED TOP* INSULATING WOOL

DESCRIPTION

RED TOP Insulating Wool consists of mineral fibers mechanically formed either into a uniform mat of definite dimensions and controlled density or into a uniform pellet form suitable for pouring or blowing into framing spaces.

RED TOP Insulating Wool Blankets—Are enclosed, except for mill cut ends. Face of enclosure is glossy asphalted paper, an effective vapor barrier, extending beyond the edges of the blanket to form nailing flanges. These flanges are wide enough that the edges are overlapped when applied to studs, thus forming a continuous vapor barrier. A strong, yet porous, flameproofed paper on the back, completes the enclosure. See table below for sizes.

RED TOP Reflective Insulating Wool Blankets are enclosed on all sides with genuine aluminum foil, except for mill-cut ends. The face of the batt is a solid surface of aluminum foil giving one of the most effective known vapor-barrier surfaces. The top surface is perforated to allow the breathing of the mineral wool fibers and minimize vapor traps in walls and ceilings. The top surfaces gives the added factor of reflecting up to 95% of radiant heat.

RED TOP Nodulated Wool—Consists of mineral fibers formed into pellets for either pouring and spreading by hand or for the installation by pneumatic methods.

FUNCTION AND UTILITY

High Thermal Resistance—Conductance is 0.27 per inch thickness and Resistance 3.70 per inch thickness. See table on back page for Resistance for given thicknesses.

Noncombustible—The mineral fibers will not burn or support combustion.

Resistance to Vapor Transmission—The aluminum foil surface or the asphalted paper resists the passage of water vapor and protects against condensation. It has a vapor permeability factor of 1.00 perm†, which is within the limits of permeability recommended by many recognized authorities for normal building occupancy.

Uniform Effectiveness—Manufactured to closely controlled tolerance for density and dimension, for uniform insulation.

Stability—Highly resilient. Resists settling. The mineral fibers are resistant to decay, corrosion, moisture and all other forms of deterioration.

Resistant to Vermin—The mineral fibers offer no sustenance to vermin or rodent life.

Light Weight—see table.

FEDERAL SPECIFICATIONS

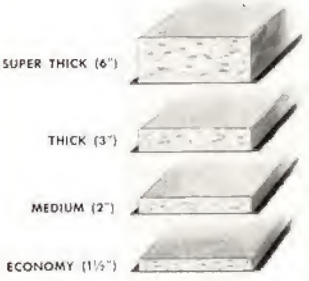
RED TOP Insulating Wools comply with Federal Specification HH-I-521C Sec IV Part 5.

LIMITATIONS OF USE

1. Masonry Walls—It is strongly recommended that at least a 1" air space be provided between insulation and exterior masonry. Suitable weep holes are recommended. If RED TOP Wool is placed in direct contact with exterior masonry walls, the masonry **must be watertight** to prevent the insulation from becoming wet. The insulation is less effective and may transmit moisture to interior finishes if it becomes wet by direct contact with leaking exterior masonry.

Suspended Ceilings and Floors Over Unexcavated Areas—Suspended ceiling may be insulated by blankets installed with the vapor barrier down. Blankets installed in floors over unexcavated areas should be provided with additional support and adequate ventilation to insure a permanently effective installation.

If preferred, Nodulated Wool may be used for suspended ceilings and installed by a wool blowing machine.



Insulating Wool Blankets

Nodulated Insulating Wool

Importance of Attic Ventilation. Natural ventilation through at least two fixed vents or louvers should be provided in unfinished attics or closed-off spaces between the insulation and roof, both to reduce moisture in those spaces during winter, and to vent heated air in summer. In every installation, vents should be located to insure complete ventilation of the space under consideration. Refer to Sweet's Light Construction file, section 3d/Uni, for complete details on ventilation.

PRODUCT DATA

Type	Approx. Thickness	Framing Spacing	Length	Approx. Wt. per Sq. Ft.
Regular Enclosed Blankets	Economy 1½"	16", 20" or 24" O.C.	96"	0.30 lbs.
	Medium 2"		24", 48", 96"	0.38 lbs.
	Thick 3"		24", 48", 96"	0.60 lbs.
Open Face Blanket	Super Thick 6"	16"	48"	1.20 lbs.
Foil-Enclosed Blankets	Medium 2"	16" or 24" O.C.	48", 96"	0.38 lbs.
	Thick 3"			0.60 lbs.
Nodulated	2"	Supplied in Nodulated Form (Non-Preformed Dimension)		0.67 lbs.
	4"			1.33 lbs.
	6"			2.00 lbs.

SPECIFICATIONS

Scope

Unless otherwise shown on plans, all insulation shall be furnished and installed according to these specifications.

Material

Insulation shall be (delete those not applicable to the project)
Thick RED TOP Insulating Wool Blankets
Medium RED TOP Insulating Wool Blankets
Thick RED TOP Reflective Insulating Wool Blankets
Medium RED TOP Reflective Insulating Wool Blankets
RED TOP Nodulated Wool
All as supplied by the United States Gypsum Company.

Application

Insulating Wool Blankets shall be installed within the stud spaces of all exterior walls and between the framing members of the top floor ceiling or roof by (1) attaching the flanges of the wool blanket to the face of the framing members, (2) recess the blanket and tack the flanges to the sides of studs or joists. The asphalted vapor barrier shall face the inside of the building and the nailing flanges shall be tacked or stapled securely. Sufficient tacks or staples shall be used to avoid gaps or bulges in the vapor barrier paper. In no case, shall they exceed a spacing of 6" on centers. Apply Insulation in all framing spaces as specified and, where necessary, the insulation and vapor barrier shall be cut to fit in a neat and workmanlike manner.

*T.M. Reg. U.S. Pat. Off.

"USG" identifies the particular fiber insulation board; "DUPLEX" identifies the particular fiber wallboard; "QUIETONE" identifies the particular wood fiber acoustical tile; "BLENDTEX" identifies the particular insulation tile and plank; "DURON and STRUCTOBOARD" identifies the particular hardboard manufactured only by United States Gypsum Co. "TEXOLITE" identifies the particular casein flat paint manufactured only by United States Gypsum Company; "RED TOP" identifies the particular mineral wool sold only by United States Gypsum Company. "USG", "BLENDTEX", "RED TOP", "DUPLEX", "QUIETONE", "BLENDTEX", "STRUCTOBOARD", "DURON", "TEXOLITE", mentioned in this publication are registered trademarks owned by United States Gypsum Company and are used by it to distinguish its products.

USG* INSULATING ROOF DECK

DESCRIPTION

Consists of layers of USG wood-fiber Insulation Board, laminated with a moisture-resistant adhesive into a strong, rigid lightweight unit. Provides excellent year-round insulation, helps reduce noise reverberation. Ceiling side has highly light-reflective Hi-Lite (Ivory) finish, requires no further decoration when deck is laid over exposed beams. Sides: tongue and groove. Ends: square. Size: 2′ x 8′. Available in two Types as follows:

USG Regular Insulating Roof Deck—for warm climates, where the average January isotherm is *above* 40° F. Thickness—1½″, 2″ & 3″.

USG Sealed Insulating Roof Deck—for cold climates, where the average January isotherm is *below* 40° F., and where such lower temperatures may be encountered for extended periods. Has effective vapor barrier between the bottom two laminations. Thicknesses—2″ and 3″.

FUNCTION AND UTILITY

Covered with a good built-up roof assembly, this deck provides excellent protection for flat, pitched or mono-slope roofs in residential construction.

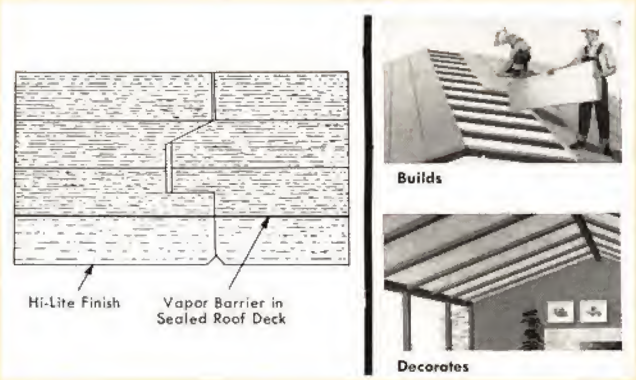
Application—Lay slabs of deck at right angles over exposed beams to form basic roof covering and ceiling of the living quarters in one operation. Beams shall not be less than 3″ wide. Tongue-and-groove edges are fitted together, with square ends resting on beams. Stagger the butt joints to keep adjoining pieces from ending on the same framing member. Start at the low edge of the roof and work up. For starting alternate courses, half-length, joint-breaking units are used.

Nailing—Nails should be at least 1½″ longer than unit thickness and spaced not over 4″ o.c. Large-head galvanized nails are preferred. Nailing starts at center, continues both ways to the ends. Place nails about 1″ from the edge at ends. Nail long edges at openings, outside walls, ridge and eaves to prevent air leakage.

Caulking—In Northern areas where the average January isotherm is below 40° F., all cut edges of sealed roof deck that occur over heated living quarters should be caulked with a good non-staining plastic caulking compound. Protect any exterior exposed edges, ends or cuts with suitable mouldings and caulking. Paint exterior exposed surfaces, such as porches or overhangs, as for exterior wood, using primer sealers and oil paints.

Roofing—After deck is laid, cover promptly with a good built-up roofing. It is important that roof deck be dry when roofing is applied. Roll roofing and rigid shingles may also be used. With shingles, a double layer of 30-lb. asphalt roofing felt must first be applied, followed with nailing strips. Roofing and rigid shingles shall be applied in accordance with manufacturer's directions. Asphalt shingles are not recommended.

Maintenance—It is essential for satisfactory performance of USG Insulating Roof Deck that the roof covering be carefully maintained to provide positive resistance to water penetration.



LIMITATIONS OF USE

Climatic—Under no circumstances should Regular (for warm climates) be used for application in cold climates. USG Sealed Insulating Roof Deck with its effective vapor barrier, is recommended (see *Caulking*). Check isotherm of community with Weather Bureau.

Job Storage—Units must be kept dry at all times. Provide proper storage, off the ground. Waterproof roofing should not be applied over units that have been wet until they have been substantially dried out.

Cautions—Although the deck will support the weight of workmen, heavy weights should not be allowed to remain on the deck for long periods. Unusually heavy slate or tile roofing should be avoided. Heavy snow should be cleared off promptly.

SPECIFICATIONS

Unless otherwise shown on plans, all roofs shall be decked with (USG Regular Insulating Roof Deck) (USG Sealed Insulating Roof Deck) manufactured by United States Gypsum Company and installed in accordance with the manufacturer's recommendations and application methods.

PRODUCT DATA

Size: 2′x8′	Thickness	Maximum Framing Centers	Approx. Wt. per Sq. Ft.
Standard Roof Deck	1½″	24″	2.25 lbs.
	2″	32″	3.0 lbs.
	3″	48″	4.5 lbs.
Sealed Roof Deck	2″	32″	3.0 lbs.
	3″	48″	4.5 lbs.

USG ROOF INSULATION

An insulation board product, when laid over wood, concrete, gypsum or steel decks, not only provides comfort for the areas below, but acts as a foundation for the built-up roof covering. The individual fibers of USG Roof Insulation are chemically treated to make them moisture resistant. USG Roof Insulation is supplied in 24″ x 48″ size with square edges. It is available in three types i.e. plain filler, asphalt impregnated and asphalt coated and in six thermal conductances, namely, 0.72, 0.36, 0.24, 0.19, 0.15, and 0.12. To meet varied insulation requirements, USG Roof Insulation meets or exceeds all requirements of Federal Specification LLL-F-321b-Class C.

*T.M. Reg. U.S. Pat. Off.

STRUCTURAL INSULATION

DESCRIPTION

USG Structural Insulation is a rigid wood-fiber insulating board made into sheathing and building boards. The products are fabricated from homogeneous mats manufactured of wood fiber produced from new timber.

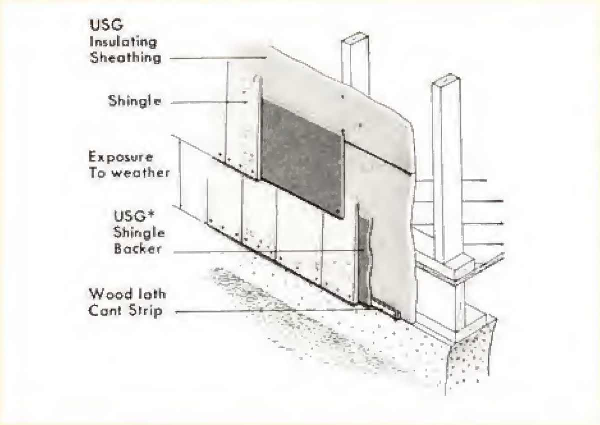
FUNCTION AND UTILITY

Structural Strength. Tensile strength and bracing strength are greatly in excess of the strength required for the designed purpose.

Insulating Value. The "k" value of USG Insulation is approximately 0.36 and its resistivity compares with 38" of stone concrete.

Light Weight. The 25/32" thickness weighs approximately 1200 pounds per M square feet. The ½" thickness weighs approximately 800 pounds per M square feet.

Tensile Strength. USG Structural Insulating products exceed all requirements set up by Federal Specification LLL-F-321b, and Commercial Standard 42-49.



USG INSULATING SHEATHING

An insulating exterior wall sheathing integrally treated to make it moisture resistant. The 25/32" x 2' x 8' size has a tongue-and-grooved joint on the long edges. The ½" x 2' x 8' size has a V-joint on the long edges. Other sizes, 4' wide by 8' or 9' long, have square edges and are either 25/32" thick or ½" thick.

Strength. A wall sheathed with 25/32" USG insulating sheathing possesses greater bracing and stiffening strength than a wall sheathed horizontally with conventional narrow sheathing units. Tests conducted at the Forest Products Laboratory, Madison, Wisconsin, indicate that a wall sheathed with 25/32" structural insulating board sheathing, has a rigidity factor of 3.0 compared to a factor of 1.0 for horizontal wood sheathing. USG 25/32" sheathing meets the structural requirements established in F.H.A. Technical Circular No. 12, covering the use of 4 foot wide insulating sheathing without diagonal bracing.

Wind-Tight. USG Insulating Sheathing, 25/32" x 2' x 8', is provided with a fitted tongue-and-groove joint on longitudinal edges and ends are joined over supports, thus making windtight joints. The use of building paper is unnecessary and not recommended.

Costs. The material cost is low, and waste from these large units is negligible. Approximately 1200 square feet is erected per man per day.

SPECIFICATIONS

SCOPE

Unless otherwise shown on plans, all exterior walls shall be sheathed according to these specifications.

MATERIALS

Sheathing shall be USG Insulating Sheathing, manufactured by United States Gypsum Company.

Nails shall be galvanized, 7/16" head diameter, 1¾" long roofing nails for 25/32" sheathing, and 1½" long for ½" sheathing.

APPLICATION

Apply USG 25/32" or ½" Insulating Sheathing with the long dimension across the supports and with the protruding edge up. Ends of sheets shall abut over centers of supports, and all end joints shall be staggered.

Apply 25/32" or ½" by 4 ft. wide sheathing with long dimension parallel with the supports. Sides and ends shall abut the vertical framing members, top and bottom plates or headers. Fit snugly around all window and door openings.

Secure sheathing to studs with nails spaced approximately 3" on outside framing members (6" apart on intermediate framing) except where exterior finish is secured to the frame with nails driven through the sheathing and into the studs, in which case nails shall be spaced approximately 8" on centers.

Nail to intermediate studs first. Nails shall be not less than ⅜" from edges or ends of sheathing.

OPTIONAL INCLUSION

1. Use of Wood Siding over USG Insulating Sheathing. Apply siding directly over sheathing, securing it with nails driven through sheathing and into studs. Nails shall have a minimum penetration of 1¼" into the studs. End joints of siding shall be over centers of studs.

2. Use of Masonry Veneer over USG Insulating Sheathing. Masonry ties shall be attached with nails driven through the sheathing into the studs, approximately 12" on centers, vertically, using nails of sufficient length to penetrate 1¼" into the studs. (At least 6d common nails.)

Continued—

USG SHINGLE-BACKER

USG Shingle-Backer is used as an insulated undercourse for wood shingle siding. It eliminates the use of wood shingles for such undercourses.

USG Shingle-Backer may be used over USG Insulating Sheathing or Wood Sheathing. When used in conjunction with 25/32" USG* Insulating Sheathing on conventional construction, the U-factor of the wall is .17 Btu. This reflects a savings of over 40% in heat loss as compared to an uninsulated wall.

USG Shingle-Backer is available in 4 foot long panels and four widths. 11¾" wide Shingle-Backer is used for 12" asbestos-cement shingles having a 10½" exposure to the weather. 13½" Shingle-Backer is used for 16" wood shingles exposed up to 12" to the weather. 15½" Shingle-Backer should be used for 18" wood shingles exposed from 12" to 14" to the weather. 16" wood shingles for 13½" exposure with 15" Shingle-Backer.

▼*Inclusion of Shingle-Backer in Specifications.*

SPECIFICATIONS—Continued

3. Use of Wood, Asbestos Cement or Slate Shingles over USG Insulating Sheathing

Apply USG Shingle-Backer over USG Insulating Sheathing:

(a) **Wood Shingles:** Nail a cant strip of wood lath to bottom edge of sidewall to provide a nailing base for the first course of Shingle-Backer and shingles.

(b) Apply first course of Shingle-Backer extending ½" below the cant strip. Center end joints on studs. Nail with 8d, 2½" galvanized box nails at the bottom of the unit at each stud and nailing through the cant strip, sheathing, and into the stud.

(c) First course of wood shingles is nailed with butt edge extending ½" below first course of Shingle-Backer. Nail shingles along butt edge with 2" annular ringed or grooved galvanized nails centered on and penetrating into the wood cant strip.

(d) Before applying a second course of Shingle-Backer determine the exposure desired for shingles. Use shiplap wood sheathing or chalk lime to provide alignment. Wood cant strip is eliminated on this and succeeding courses. The Shingle-Backer is nailed with 8d galvanized nails along the lower edge at stud locations. Nails are driven through the first course shingle and Shingle-Backer, sheathing and into the studs.

USG INSULATING BUILDING BOARD

DESCRIPTION

USG Insulating Building Board is a highly efficient, lightweight, rigid, square-edged, wood-fiber insulating board. Manufactured ½" thick, 4' wide and 8', 10', 12' long, with an attractive Hi-Lite stipple-texture surface finish.

FUNCTION AND UTILITY

USG Insulating Building Board provides excellent thermal insulation for walls, ceilings and floors in all types of light construction—prefabricated buildings, attic walls and ceilings, recreation rooms, basement and storage rooms, garage lining, summer cottages, etc. In addition to its high insulating value ("k"—0.36) its structural qualities add bracing strength and rigidity to the framing.

The Hi-Lite, plastic-coated stipple texture provides an attractive predecorated surface that may be cleaned with wallpaper cleaner—or redecorated with any standard paint (TEXOLITE* paints are recommended). USG Insulating Building Board is readily cut or shaped to fit with ordinary tools. The large sheets are easily and quickly erected, lending further economy to its use.

DUPLEX* WALLBOARD

DESCRIPTION

DUPLEX Wallboard is a lightweight, rigid, square-edged, wood-fiber board—⅜" thick, 4' wide and 8' and 10' long, with Hi-Lite, stipple-texture finish.

FUNCTION AND UTILITY

As a low-cost predecorated utility wallboard, DUPLEX is used extensively for finishing walls and ceilings in attics, garages, cottages, basements and all types of temporary buildings.

LIMITATIONS OF USE

While its "k" value is 0.36—because of its ⅜" thickness and correspondingly reduced insulating effectiveness, DUPLEX Wallboard is recommended for use where the insulating function is of secondary importance, and where its thickness, strength and rigidity are satisfactory for the purpose.

PRODUCT DATA

Product	Nominal Thickness	Width	Length	Color	Edge	Weight lbs. per M sq. ft.
USG Insulating Sheathing	25/32"	2'	8'		Tongue & Groove Joint	1300
	½"				"V" Joint	860
	25/32"	4'	8' and 9'		Square	1300
	½"					860
USG Shingle-Backer	⅜"	11¾"	48"		Square	600
		13½"				
		15"				
		15½"				
USG Ins. Building Board	½"	4'	8', 10', 12'	Hi-Lite	Square	750
DUPLEX Wallboard	⅜"	4'	8', 10'	Hi-Lite	Square	600

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*T.M. Reg. U.S. Pat. Off.

DECORATIVE INSULATION

DESCRIPTION

USG Decorative Insulation is rigid wood fiber insulating board made into predecorated interior wall and ceiling units. The products are fabricated from homogeneous mats manufactured of wood fiber produced from new timber.

There are two basic types of USG Decorative Insulation:

1. USG Insulating Twin-Tile and Panel-Tile—Square and rectangular patterns generally used for ceiling paneling.
2. USG Insulating Plank—Long, narrow, ceiling height units simulating vertical random wall planking.

Colors:

USG Insulating tile—Hi-Lite (a light ivory solid color).
USG Insulating plank—Hi-Lite or BLENDTEX* (a blend of four tan tones).

FUNCTION AND UTILITY

Decorative—Many designs and patterns are possible with combinations of random width plank and various sizes of tile.

Insulating—The ½" thickness, with a thermal conductance of 0.72, is equal to approximately 19" of stone concrete in resistance to heat transfer.

Tongued and Grooved—The Kwik-Lok joint featured on Twin-Tile, Panel-Tile, and Plank is designed specially for application utilizing the automatic stapling machine or tacker. This wide flange tongue and groove edge interlocks securely preventing harmful discoloration caused by joint "breathing" and assures better alignment of units for true and level ceilings.

Economical—Sizes 12" x 24" and 16" x 32", ½" Twin-Tile are center-scored to exactly simulate 12" x 12" and 16" x 16" patterns. This "two-in-one" feature reduces application costs on square patterns by at least 40%. Panel-Tile unit sizes are the same as Twin-Tile but without the center scoring. This produces a rectangular instead of a square pattern. The stapling method of application offers a saving up to 50%.

Easy Application—USG Tile and Plank may be stapled or nailed to conventional wood supports or may be applied to solid surfaces with adhesives. Practically any type of interior wall or ceiling may be finished with these materials.

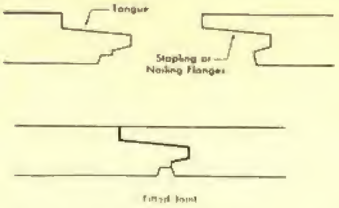
Easily Maintained—Ordinary surface dust may be removed by using wallpaper cleaner. Redecorating may be done with good lead and oil or water-thinned emulsion paints; TEXOLITE* is recommended.

LIMITATIONS OF USE

1. Supports must be spaced not to exceed 16".
2. Where adhesive method of application is used, the adhesive must be prepared and used in strict accordance with manufacturer's directions.

USG Insulating Panel-tile—ceiling application.

USG Insulating Twin-Tile—ceiling application.
USG Insulating Plank—side wall and column application.



PRODUCT DATA

Product	Thickness	Sizes	Weight per M sq. ft.	Decorative Effects	Edges
USG Insulating PANEL-TILE	½"	12"x24" 16"x32"	850	Hi-Lite	Kwik-Lok
USG Insulating TWIN-TILE	½"	12"x24" (Simulates 12"x12") 16"x32" (Simulates 16"x16")	850	Hi-Lite	Kwik-Lok
USG Insulating PLANK	½"	Widths: 8", 12", 16" Lengths: 8 ft. 10 ft.	850	Hi-Lite or BLENDTEX	Kwik-Lok
USG QUIETONE* (Square) Acoustical Tile	½"	12"x12"	640	Bone white Regular or Random Pattern	Butt-bevel
	¾"		950		
USG QUIETONE (Twin-Tile) Acoustical Tile	½"	12"x24" (Simulates 12"x12")	750	Bone white Regular or Random Pattern	Kwik-Lok
	¾"		950		

LIGHT REFLECTION: Bone white 79%; Hi-Lite 70 to 80%

*T.M. Reg. U.S. Pat. Off.

SPECIFICATIONS

SCOPE

Unless otherwise shown on plans, all decorative insulation shall be furnished and installed according to these specifications.

(Note to Architect: If different sizes are required for various areas, list and locate all wall and ceiling areas to be covered.)

USG INSULATING PANEL-TILE AND TWIN-TILE

MATERIALS

Insulating tile shall be *(specify size)* USG Insulating Panel-Tile or Twin-Tile (Hi-Lite), manufactured by United States Gypsum Company.

Stapling machine shall be the Bostitch T-5-8 or the Markwell L 3 M or equivalent which utilizes 9/16" coated staples.

Nails shall be 1⅛" Blued Plasterboard nail with 5/16" head, or approved equal.

APPLICATION

USG Insulating Twin-Tile or Panel-Tile shall be nailed or stapled to joists or furring strips. Three nails or staples should be equally placed in the tongue on the long dimension and one in the tongue of the short dimension for secure fastening. All edges and grooves shall be in straight alignment.

Optional Inclusion—Application with Adhesives
(Note: For use only over plasterboard or plaster surfaces.)

PREPARATION OF SURFACES

Surfaces shall be prepared for the application of Insulating Tile by removing grease, dirt or any loose or chalky substance that may prevent proper bond.

MATERIALS

(Note to Architect: Under this heading in the specification, delete the paragraph on nails and substitute the following.) Adhesive (describe) shall be an approved adhesive manufactured expressly for the purpose. The adhesive shall not be water soluble, contain ingredients that react chemically with paint, or contain a solvent that has a stronger solvent action on paint than naphtha. It shall not contain alcohol.

APPLICATION

Adhesive shall be used over a dry surface only. It shall be used according to the directions of the adhesive manufacturer. Adhesive shall be applied to the back of the tile, working a small quantity of adhesive in spots about 3" in diameter placed 2" to 2½" from edges and spaced approximately 8" in each direction. Additional adhesive shall then be applied to these primed spots to a thickness of ⅜" to ½". No adhesive shall be applied to the wall or ceiling surface.

Tile then shall be placed against the surface about ½" from its final position and slid into place. Pressure shall be exerted on the entire surface of the tile as it slides into place sufficient to provide suction to hold it in place until the adhesive sets. If necessary to bring a unit to proper level, remove and apply additional adhesive. Once the units are in place they shall not be pulled away from the base to level the surface.

QUIETONE ACOUSTICAL TILE

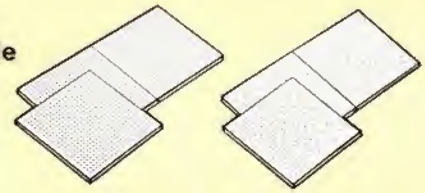
MATERIALS

Acoustical tile shall be USG QUIETONE (Perforated) (Random Perforated) (specify size) (edge) as manufactured by United States Gypsum Co. All material to have Bone white mill finish, and shall be erected in accordance with manufacturer's specifications.

APPLICATION

Regular or Random Pattern Perforated QUIETONE (½", ¾" thickness) (Butt-Bevel) (Kwik-lok) shall be applied by (stapling) (nailing) (adhesive) in accordance with manufacturer's specifications.

QUIETONE*
Acoustical Tile



DESCRIPTION

Perforated QUIETONE Acoustical Tile is a lightweight, low cost, wood fiber tile, designed and produced to give maximum sound control efficiency. It is available in two patterns—Regular and Random. The perforating in the Regular is evenly spaced and the pattern is symmetrical. The perforations in the Random type are irregularly spaced to minimize the appearance of individual tile units.

The surfaces of both the Regular and Random Pattern QUIETONE are factory painted bone white and may be repainted many times without reducing the acoustical efficiency.

SIZES

Perforated or Random Perforated QUIETONE is available in ½" or ¾" thicknesses and in 12" x 12" or 12 x 24" sizes. The 12" x 24" tongue and groove units are center-scored to represent two 12" x 12" units. QUIETONE can be applied by adhesive, Mtg #1; or by blind stapling, nailing, to wood furring strip, Mtg #2.

Sound Absorption Coefficients

Description	Thickness	Mounting	Coefficients of Cycles Shown						NCR	wt. psf
			125	250	500	1000	2000	4000		
Regular Perforated	½"	1	.14	.27	.61	.68	.66	.68	.55	.74
		2	.15	.69	.48	.59	.70	.68	.60	.74
	¾"	1	.13	.35	.71	.82	.77	.64	.65	.94
		2	.25	.65	.57	.79	.78	.63	.70	.91
Random Perforated	½"	1	.11	.26	.52	.57	.60	.66	.50	.73
		2	.18	.60	.40	.47	.63	.77	.55	.74
	¾"	1	.22	.34	.71	.74	.77	.72	.65	.92
		2	.29	.67	.54	.68	.75	.65	.65	.95

LIGHT RELFECTION: Bone white, 79%
HEAT CONDUCTIVITY: k=0.38

Test by official A.M.A. Laboratory

USG DURON* HARDBOARD

DESCRIPTION

DURON Hardboard, DURON Underlayment and STRUCTOBOARD* consist of felted wood fiber and special plasticizing ingredients which are introduced into the fiber stock before forming and pressing.

FUNCTION AND UTILITY

DURON Hardboard and STRUCTOBOARD have many uses in residential construction such as wainscoting over solid backing, counter tops, closet and cupboard doors, etc., and can be sawed, die-cut, bent, punched, drilled, grooved, planed or sanded.

DURON Underlayment is especially designed as a base for lineolum, asphalt tile, cork tile, rubber tile, carpeting and other floor coverings. It may be used in either new construction over wood sub-floors, or in remodeling over all-wood finished floors.

PRODUCT DATA

		Typ. Mod. of Rupture lbs./sq. in.
DURON HARDBOARD— 4' wide x 6', 8', 9, '10', 12'	⅛" Regular	7000
	3/16" Regular	6300
	⅛" Treated	9000
	3/16" Treated	7500
Underlayment—4'x3'; 4'x4'		4000
Structoboard—4' wide x 3', 4', 6', 8', 10', 12'		4000

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*T.M. Reg. U.S. Pat. Off.

INSULATIONS

CONDUCTIVITIES (K) AND CONDUCTANCES (C)

for use in calculating heat transmission coefficients

	PRODUCT	DESCRIPTION	Conductivity* or Conductance		Resistance Per Inch Thickness	Resistance For Thickness Listed
			(k)	(C)	1/k	1/C
USG PRODUCTS	½" USG Insulating Products	Tile, Plank, Building Board, DUPLEX	0.36	0.72	2.80	1.39
	25/32" USG Insulating Products	Asphalt-Coated or Impregnated Sheathing	0.36	0.46	2.80	2.17
	RED TOP Insulating Wool	Paper-Enclosed Blankets Economy 1½"	0.27	0.180	3.70	5.55
		Paper-Enclosed Blankets Medium 2"	0.27	0.135	3.70	7.40
		Paper-Enclosed Blankets Thick 3"	0.27	0.090	3.70	11.10
		Open Face Blankets Super Thick 6"	0.27	0.045	3.70	22.20
		Foil-Enclosed Blankets Medium 2"	0.27			
		Foil-Enclosed Blankets Thick 3"	0.27			
		Nodulated (Non-preformed dimensions) 2"	0.27	0.135	3.70	7.40
		4"	0.27	0.067	3.70	14.80
		6"	0.27	0.045	3.70	22.20
	USG Insulating Roof Deck	Regular & Sealed. †1½"		0.24	Coefficients	0.18
		2"		0.18	of Trans-	0.15
		(†Regular only.) 3"		0.12	mission "U" deck only	0.10
	USG Roof Insulation	Plain-Asphalt Coated or Asphalt Impregnated ½"		0.72		
		1"		0.36		
		1½"		0.24		
		2"		0.18		
AIR SPACES	(Bounded by ordinary materials)	Vertical ¾" or more in width		1.10		0.91
EXTERIOR FINISHES	(Frame Walls)					
	Brick Veneer	4" thick (nominal)		2.27		0.44
	Wood Shingles			1.28		0.78
	Yellow Pine Lap Siding			1.28		0.78
INTERIOR FINISHES	Gypsum Plaster		3.30		0.30	
	Gypsum Board—½"	Plain or Decorated		2.82		0.35
	Gypsum Lath & Plaster	Plaster Thickness ½"		2.40		0.42
	Insulating Board		0.36		2.8	
	Plaster Base, ½" Thick	Plaster Thickness—½"		0.60		1.67
	Metal Lath and Plaster	Plaster Thickness—¾"		4.40		0.23
	Wood Lath and Plaster			2.50		0.40
MASONRY MATERIALS	Brick	Face		2.30		0.43
	4" Clay Tile (Hollow)	1 Air Cell Direction Heat Flow		1.00		1.00
	6" Clay Tile (Hollow)	2 Air Cell Direction Heat Flow		0.64		1.57
	8" Clay Tile (Hollow)	2 Air Cell Direction Heat Flow		0.60		1.67
	Concrete	Light Weight Aggregate	2.50		0.40	
	Concrete	Sand and Gravel Aggregate	12.00		0.08	
	4" Concrete Blocks	Hollow—Cinder Aggregate		1.00		1.00
	8" Concrete Blocks	Hollow—Gravel Aggregate		1.00		1.00
	8" Concrete Blocks	Hollow—Cinder Aggregate		0.60		1.66
	12" Concrete Blocks	Hollow—Cinder Aggregate		0.53		1.88
ROOFING MATERIALS	Asphalt Shingles			6.50		0.15
	Built-up Roofing	Assumed Thickness—⅜"		3.53		0.28
	Wood Shingles			1.28		0.78
SHEATHING	Gypsum—½"			2.82		0.35
	Insulating Board—25/32"			0.46		2.17
	Fir & Yellow Pine (1")	Actual Thickness—25/32"		1.02		0.98
SURFACES	Still Air	Ordinary Non-Reflective Materials		1.65		0.61
	15 MPH Wind Velocity	Ordinary Non-Reflective (Vertical) Mat'ls		6.00		0.17
WOODS	Yellow Pine or Fir		0.80		1.25	
	Fir Sheathing—Building Paper and Yellow Pine Lap Siding			0.50		2.00

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* Expressed in Btu per sq. ft. per hr. per deg. F. temperature difference. Conductivities (k) are per inch thickness and conductances (C) are for thickness or construction stated, not per inch of thickness.

A.I.A. File 4-E-6

TECHNICAL INFORMATION

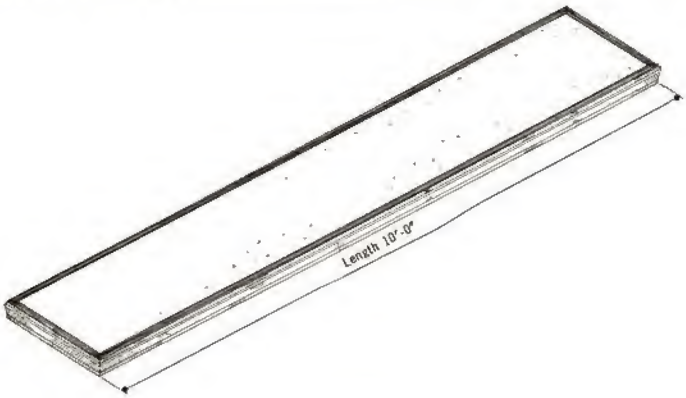
USG® METAL EDGE GYPSUM PLANK

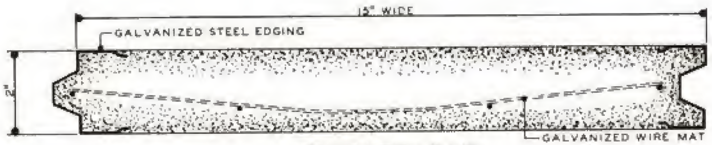
UNITED STATES GYPSUM

1960

A.I.A. File 4-E-6

METAL EDGE
GYPSUM ROOF PLANK





SECTION THRU PLANK

DESCRIPTION

USG Metal Edge Gypsum Plank is a precast structural roof deck unit 2 inches thick, 15 inches wide, and 10 feet long which weighs approximately 10.5 pounds per square foot. Reinforced with 22 gauge galvanized steel tongue and groove edges and a 16 gauge galvanized wire mat, the unit is designed to span a maximum of 7 feet under normal design roof loads.

FUNCTION AND UTILITY

Interlocking Tongue and Groove. The accurately formed interlocking edges mate with adjacent plank, distributing the load. This design permits plank ends to occur off supports, and uniform spacing of roof purlins is therefore unnecessary.

Ease of Erection. The large size and interlocking edges permit easy, fast construction.

Winter Construction. Because the units are precast and laid without grout, winter delays are avoided.

Nailable—The gypsum provides adequate nail holding power for nailing asphalt, asbestos, slate and clay tile shingles. Care should be taken in selecting a nail which will insure as nearly as possible the 1½" maximum recommended penetration into the plank. (See data table on this page.)

Strength—Tested on 6'-8" center to center spans, the ultimate load was 215 p.s.f. Conforms to Federal Specification SS-S-439 and ASTM C377-56T.

Adaptability. USG Metal Edge Plank can be used on flat, pitched, and curved roofs, provided the radius of the curve exceeds 150 feet.

UPLIFT

Laboratory tests show Standard Attachment Clips will support loads up to 2100 pounds with failure by shear of the 4d nail attachment.

NAIL HOLDING POWER OF GYPSUM

Description of Nail	Holding Power of dry slab. Penetration ¼" less than nail length. Lbs. per Nail
1¾" LaBelle Square Cut	150 lbs.
1½" Galvanized Roofing Nail	25 lbs.
1¾" Independent Screw-Tite Squarehed	46 lbs.

THERMAL INSULATION VALUES

"U" Factor for complete roof slab including built-up roof covering (Btu per sq. ft., per hr., per deg. F. diff. in temperature)

Plank without added insulation—0.51 Btu
Plank with ½" added insulation—0.30 Btu
Plank with 1" added insulation—0.21 Btu

Note: The insulation considered is a rigid type wood fiber board with a "k" factor of .36

RECOMMENDATIONS—LIMITATIONS OF USE

Job Protection. During job storage, gypsum plank should be protected from exposure to rain and snow. Handle and store on edge. Use temporary wood planking over gypsum plank areas exposed to repetitive impact or wheel loads during construction.

Roof Covering. Apply built-up roof covering in accordance with roofing manufacturers' specifications as soon as possible after installation of gypsum plank. The recommended application of roofing to Metal Edge Gypsum Plank is by nailing the first sheet dry using nails providing a minimum penetration of 1¼" (no more than 1½") into the slab. If roofing is mopped on precautions should be taken to prevent leakage of pitch or asphalt through joints in the plank. Apply asphalt, asbestos or light slate shingles in accordance with manufacturers recommendations.

A 15 lb. felt underlayment is recommended.

Excessive Moisture. Gypsum plank roofs are practical for all buildings having normal humidity conditions. Whenever continuous high humidity is anticipated, such as in wet process plants, consult the nearest USG Sales Office for recommendations.

High Temperature. Gypsum plank for roofs or floors perform satisfactorily on buildings exposing them to normal or moderately high temperatures. Where unusually high temperatures are expected, such as in foundries, furnace rooms, over breechings, etc., consult the nearest USG Sales Office for recommendations.

Steep Roofs. Gypsum plank can be used satisfactorily on steeply pitched roofs if precautions are taken to prevent thrust accumulation. See "f" under "erection".

Venting of Enclosed Spaces. All enclosed spaces beneath roof decks should be adequately vented to the outside. Such venting by small louvers or openings does not appreciably affect attic temperatures. Please refer to *Heating, Ventilating, Air Conditioning Guide*, published annually by the American Society of Heating and Air Conditioning Engineers for complete information on venting of attic spaces (Chapters 10 and 12).

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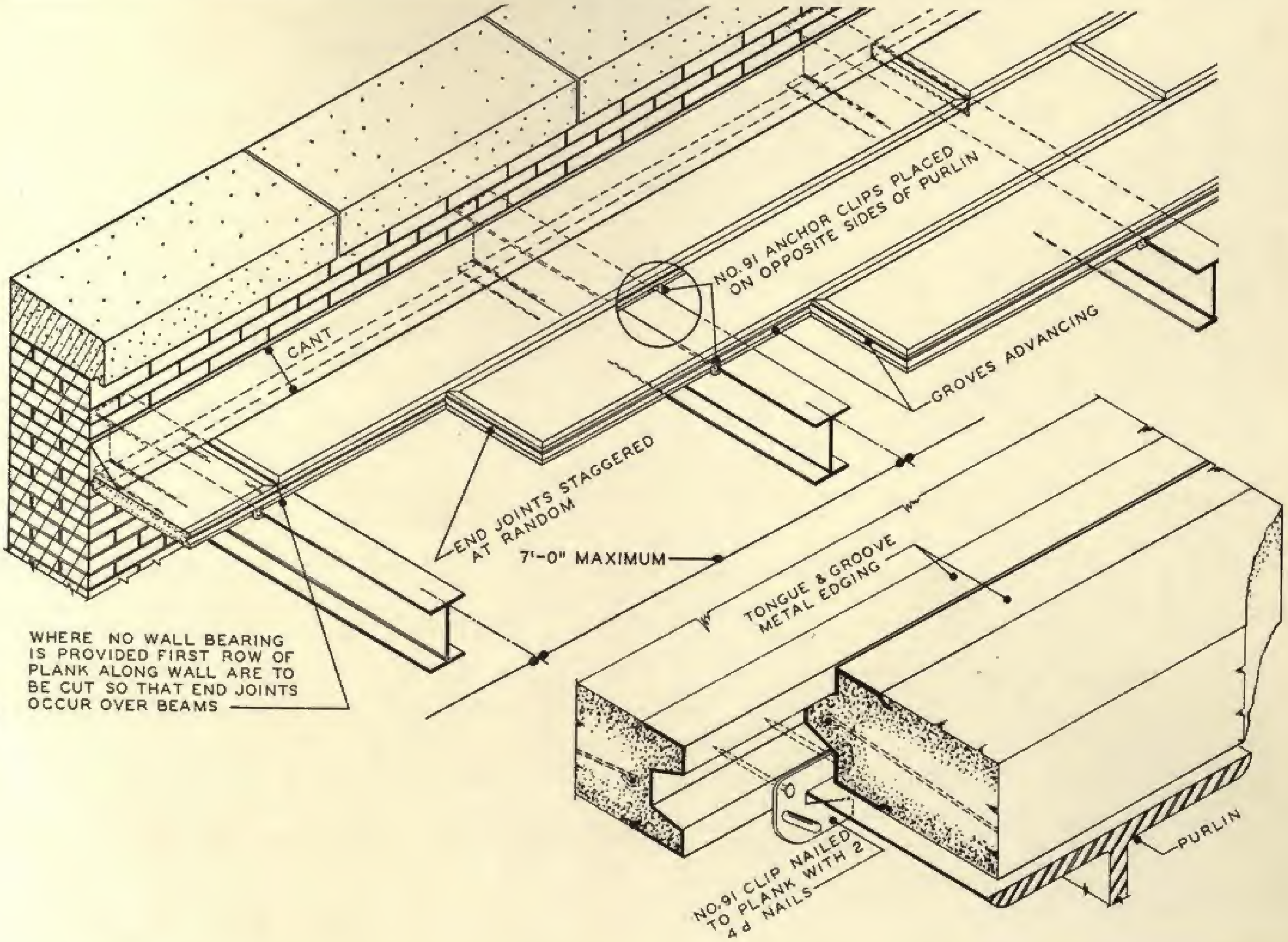
CANT
NO.91 ANCHOR CLIPS PLACED ON OPPOSITE SIDES OF PURLIN
GROVES ADVANCING
END JOINTS STAGGERED AT RANDOM
7'-0" MAXIMUM
TONGUE & GROOVE METAL EDGING
WHERE NO WALL BEARING IS PROVIDED FIRST ROW OF PLANK ALONG WALL ARE TO BE CUT SO THAT END JOINTS OCCUR OVER BEAMS
PURLIN
NO.91 CLIP NAILED TO PLANK WITH 2 4d NAILS

SPECIFICATIONS

Scope. Unless otherwise shown on plans, all roof areas shall be covered with gypsum plank, and all curbs, cants, saddles, etc., shall be as shown or specified herein.

Materials. *Gypsum plank* shall be 2″ x 15″ x 10′0″ metal edge gypsum plank, manufactured by United States Gypsum Company.

Clips and nails. The manufacturer of the gypsum plank shall furnish standard galvanized clips for attachment to main purlins, (200 clips per 1000 sq. ft.). Nails (2 per clip) shall be 4d galvanized slaters or 1″ smooth shank No. 11 ga. galvanized roofing nails.

Cants and saddles shall be formed of PYROFILL* gypsum fiber concrete manufactured by United States Gypsum Company.

SPECIAL FORMING

Ridges and Hips. Fill joints at ridges and hips with mortar consisting of USG Gypsum Grouting Cement and sand mixed in the proportion of 1 part cement to 2 parts clean sharp sand by volume.

Cants and Drainage Fills. All curbs, cants, drainage saddles, etc., shall be installed as indicated or required using PYROFILL Gypsum Fiber Cement mixed with clean water only in the proportion of 8 gallons of water to each 80 lb. bag of PYROFILL.

Painting. Plank must be dry before painting with sealing type oil or latex base paints. Galvanized edging must be freed from grease or oil by cleaning with mineral spirits or a similar solvent.

Edging can be painted with a zinc dust metal primer of the type meeting Federal Specification TTP—641—b, dated 1-23-53, Type II.

Seal gypsum surfaces with TEXOLITE* Vinyl Sealer or SHEETROCK* Sealer.

Allow metal primer and Sealer to dry. Apply one or two coats of USG DURAVAL* or equal latex paint, oil paint, or alkyd flat paint. If it is necessary to paint before plank is dry, prime metal edging as above. Paint edging and gypsum with USG TEXOLITE* Standard or equal casein paint which has been reinforced by additional fungicide such as 1¼ oz. Dowicide "G" per gallon of paste.

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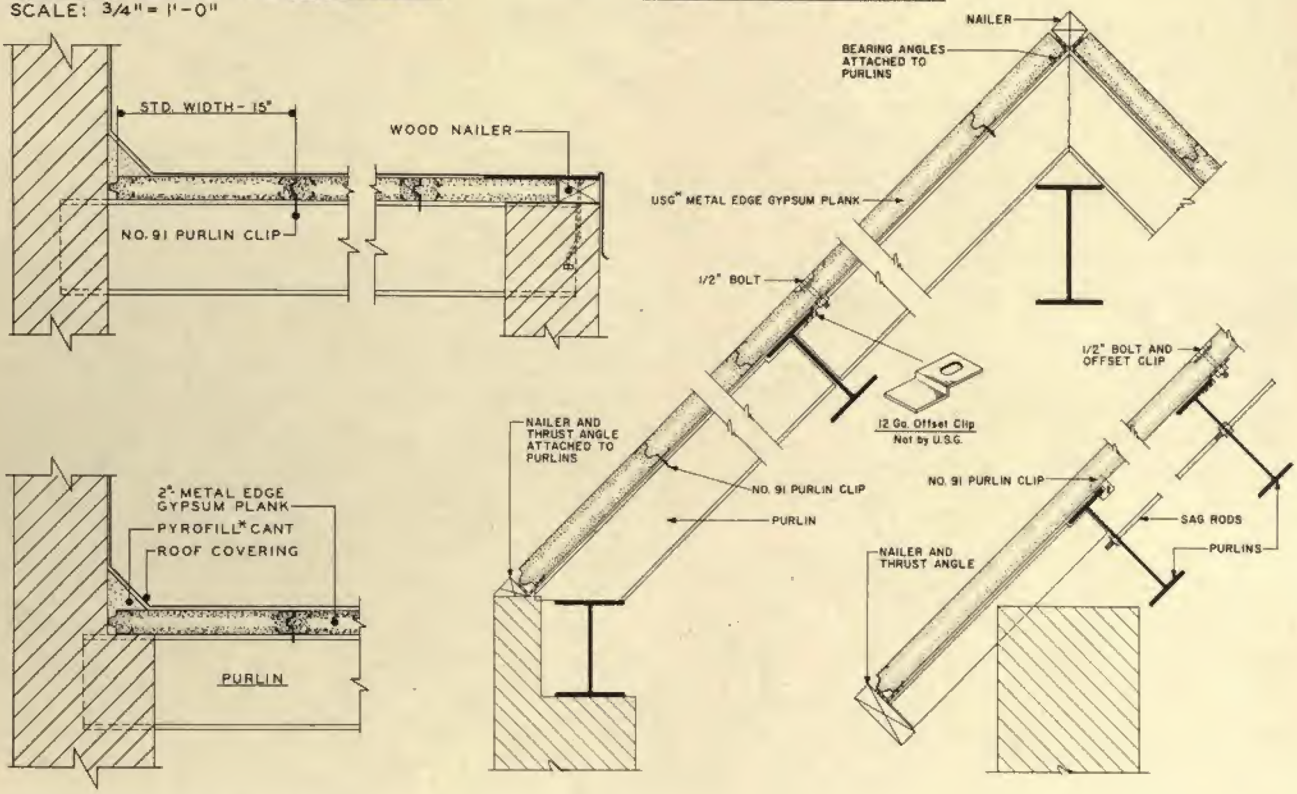
*T.M. Reg. U.S. Pat. Off

METAL EDGE GYPSUM ROOF PLANK

PARAPET & END WALL DETAILS

SCALE: 3/4" = 1'-0"

STEEP PITCH DETAILS



ERECTION

Placing of Plank. Start laying plank at one corner of each independent area.

All plank shall be laid dry with marked side up and with the GROOVE side advancing. Plank shall be placed on supporting steel with joints tightly interlocked.

Where no wall supports are provided along the longitudinal edge of the starting and final rows of plank, plank in these rows shall be cut so that end joints occur over roof supports. (When supports are provided along the wall, end joints may occur off the supports.)

End joints in adjacent rows shall be staggered not less than 30 inches. Alternate rows shall be started with full units or cut pieces long enough to have bearing at not less than two supports. End of rows shall be finished similarly. The remaining rows can be started (or finished) with cut plank long enough to have not less than one support. Cut plank to fit at walls, ridges, valleys and around openings as indicated or required.

Anchorage of Plank To Supports. Each plank shall be anchored to supporting members by the following method:

- **a.** Steel Purlins—Use one galvanized clip at every point of support. Where possible, alternate position of clips so that each clip is facing in opposite direction to the next one. Secure each clip to plank with 2 nails.
- **b.** Steel Purlins—Weld metal edging of plank to supports by flowing weld from the support to the plank edging being careful not to burn holes in the edging.
- **c.** Other Type Purlins—Where clip or weld cannot be used we suggest driving nails through the metal edging on both sides of the purlin and using a wire looped from nail to nail for anchor to the purlin.
- **d.** Concrete Joists—Use power driven studs fired through the plank, 2 studs per plank at each intersection, with penetration into the joist adequate for secure attachment. If steel plates are imbedded in concrete joists use method in (b) above.
- **e.** Wood Joists—Use two 16 penny nails at each intersection of plank with purlin. Drive nails so that their heads are flush with the top surface of the plank.
- **f.** For pitches greater than 30°, standard #91 anchor clip attachment should be employed plus additional anchorage provided by $\frac{1}{2}''$ standard bolts spaced one per 30 square feet of roof area. See detail above.

A.I.A. File 4-E-6

TECHNICAL INFORMATION

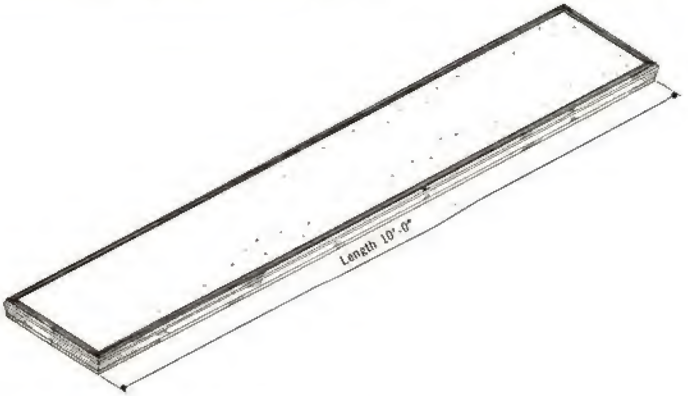
USG® METAL EDGE GYPSUM PLANK

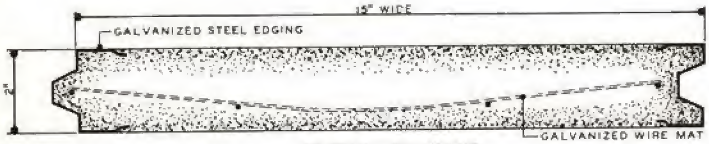
UNITED STATES GYPSUM

1960

A.I.A. File 4-E-6

METAL EDGE GYPSUM ROOF PLANK





SECTION THRU PLANK

DESCRIPTION

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FUNCTION AND UTILITY

Interlocking Tongue and Groove. The accurately formed interlocking edges mate with adjacent plank, distributing the load. This design permits plank ends to occur off supports, and uniform spacing of roof purlins is therefore unnecessary.

Ease of Erection. The large size and interlocking edges permit easy, fast construction.

Winter Construction. Because the units are precast and laid without grout, winter delays are avoided.

Nailable—The gypsum provides adequate nail holding power for nailing asphalt, asbestos, slate and clay tile shingles. Care should be taken in selecting a nail which will insure as nearly as possible the 1½" maximum recommended penetration into the plank. (See data table on this page.)

Strength—Tested on 6'-8" center to center spans, the ultimate load was 215 p.s.f. Conforms to Federal Specification SS-S-439 and ASTM C377-56T.

Adaptability. USG Metal Edge Plank can be used on flat, pitched, and curved roofs, provided the radius of the curve exceeds 150 feet.

UPLIFT

Laboratory tests show Standard Attachment Clips will support loads up to 2100 pounds with failure by shear of the 4d nail attachment.

NAIL HOLDING POWER OF GYPSUM

Description of Nail	Holding Power of dry slab. Penetration ¼" less than nail length. Lbs. per Nail
1¾" LaBelle Square Cut	150 lbs.
1½" Galvanized Roofing Nail	25 lbs.
1¾" Independent Screw-Tite Squarehed	46 lbs.

THERMAL INSULATION VALUES

"U" Factor for complete roof slab including built-up roof covering (Btu per sq. ft., per hr., per deg. F. diff. in temperature)
Plank without added insulation—0.51 Btu
Plank with ½" added insulation—0.30 Btu
Plank with 1" added insulation—0.21 Btu

Note: The insulation considered is a rigid type wood fiber board with a "k" factor of .36

RECOMMENDATIONS—LIMITATIONS OF USE

Job Protection. During job storage, gypsum plank should be protected from exposure to rain and snow. Handle and store on edge. Use temporary wood planking over gypsum plank areas exposed to repetitive impact or wheel loads during construction.

Roof Covering. Apply built-up roof covering in accordance with roofing manufacturers' specifications as soon as possible after installation of gypsum plank. The recommended application of roofing to Metal Edge Gypsum Plank is by nailing the first sheet dry using nails providing a minimum penetration of 1¼" (no more than 1½") into the slab. If roofing is mopped on precautions should be taken to prevent leakage of pitch or asphalt through joints in the plank. Apply asphalt, asbestos or light slate shingles in accordance with manufacturers recommendations.

A 15 lb. felt underlayment is recommended.

Excessive Moisture. Gypsum plank roofs are practical for all buildings having normal humidity conditions. Whenever continuous high humidity is anticipated, such as in wet process plants, consult the nearest USG Sales Office for recommendations.

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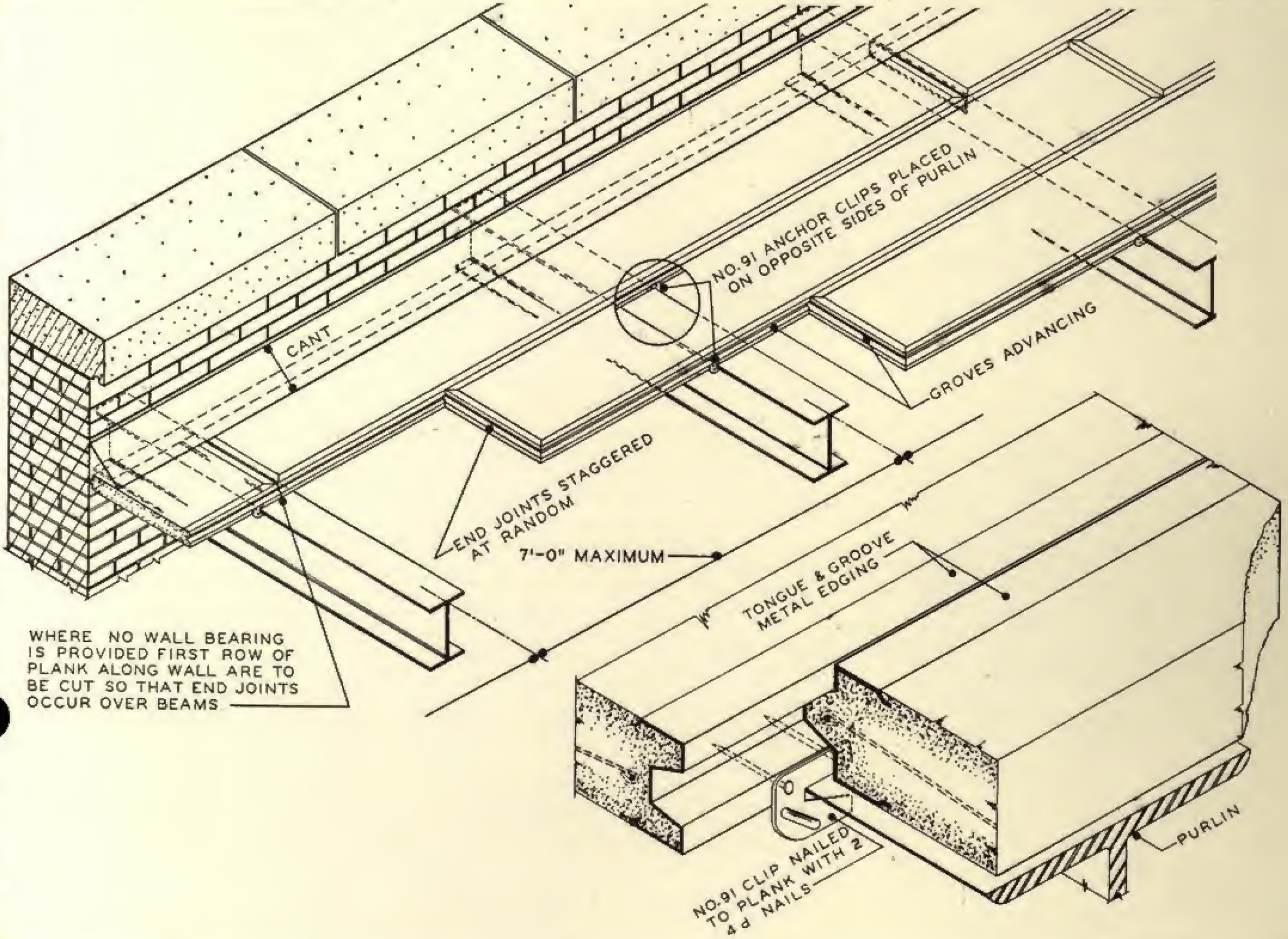
Venting of Enclosed Spaces. All enclosed spaces beneath roof decks should be adequately vented to the outside. Such venting by small louvers or openings does not appreciably affect attic temperatures. Please refer to *Heating, Ventilating, Air Conditioning Guide*, published annually by the American Society of Heating and Air Conditioning Engineers for complete information on venting of attic spaces (Chapters 10 and 12).

"USG", "PYROFILL", "SHEETROCK", "DURAVAL", and "TEXOLITE" are registered trademarks owned by United States Gypsum, used by it to distinguish its products. "USG" identifies the particular gypsum plank and roof deck, "PYROFILL" and identify the particular gypsum concrete, "SHEETROCK", "DURAVAL" and "TEXOLITE" identify the particular sealer and paint manufactured only by United States Gypsum Company.


NO. 91 ANCHOR CLIPS PLACED ON OPPOSITE SIDES OF PURLIN
CANT
GROVES ADVANCING
END JOINTS STAGGERED AT RANDOM
7'-0" MAXIMUM
TONGUE & GROOVE METAL EDGING
NO. 91 CLIP NAILED TO PLANK WITH 2 4d NAILS
PURLIN

WHERE NO WALL BEARING IS PROVIDED FIRST ROW OF PLANK ALONG WALL ARE TO BE CUT SO THAT END JOINTS OCCUR OVER BEAMS

SPECIFICATIONS

Scope. Unless otherwise shown on plans, all roof areas shall be covered with gypsum plank, and all curbs, cants, saddles, etc., shall be as shown or specified herein.

Materials. *Gypsum plank* shall be 2″ x 15″ x 10′0″ metal edge gypsum plank, manufactured by United States Gypsum Company.

Clips and nails. The manufacturer of the gypsum plank shall furnish standard galvanized clips for attachment to main purlins, (200 clips per 1000 sq. ft.). Nails (2 per clip) shall be 4d galvanized slaters or 1″ smooth shank No. 11 ga. galvanized roofing nails.

Cants and saddles shall be formed of PYROFILL* gypsum fiber concrete manufactured by United States Gypsum Company.

SPECIAL FORMING

Ridges and Hips. Fill joints at ridges and hips with mortar consisting of USG Gypsum Grouting Cement and sand mixed in the proportion of 1 part cement to 2 parts clean sharp sand by volume.

Cants and Drainage Fills. All curbs, cants, drainage saddles, etc., shall be installed as indicated or required using PYROFILL Gypsum Fiber Cement mixed with clean water only in the proportion of 8 gallons of water to each 80 lb. bag of PYROFILL.

Painting. Plank must be dry before painting with sealing type oil or latex base paints. Galvanized edging must be freed from grease or oil by cleaning with mineral spirits or a similar solvent.

Edging can be painted with a zinc dust metal primer of the type meeting Federal Specification TTP—641—b, dated 1-23-53, Type II.

Seal gypsum surfaces with TEXOLITE* Vinyl Sealer or SHEETROCK* Sealer.

Allow metal primer and Sealer to dry. Apply one or two coats of USG DURAVAL* or equal latex paint, oil paint, or alkyd flat paint. If it is necessary to paint before plank is dry, prime metal edging as above. Paint edging and gypsum with USG TEXOLITE* Standard or equal casein paint which has been reinforced by additional fungicide such as 1¼ oz. Dowicide "G" per gallon of paste.

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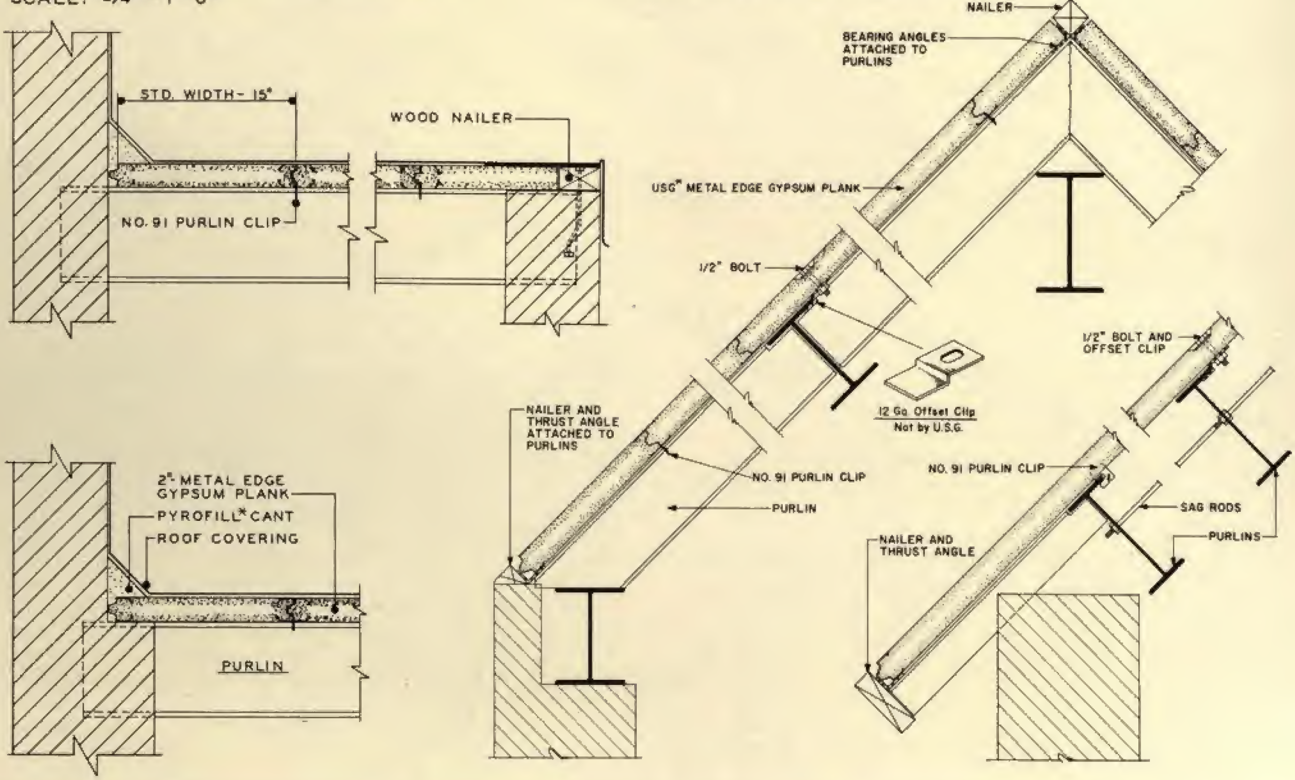
*T.M. Reg. U.S. Pat. Off.

METAL EDGE GYPSUM ROOF PLANK

PARAPET & END WALL DETAILS

SCALE: 3/4" = 1'-0"

STEEP PITCH DETAILS


STD. WIDTH - 15"
WOOD NAILER
NO. 91 PURLIN CLIP
2" METAL EDGE GYPSUM PLANK
PYROFILL* CANT
ROOF COVERING
PURLIN
NAILER
BEARING ANGLES ATTACHED TO PURLINS
USG* METAL EDGE GYPSUM PLANK
1/2" BOLT
12 Ga. Offset Clip Not by U.S.G.
NAILER AND THRUST ANGLE ATTACHED TO PURLINS
NO. 91 PURLIN CLIP
PURLIN
1/2" BOLT AND OFFSET CLIP
NO. 91 PURLIN CLIP
SAG RODS
PURLINS
NAILER AND THRUST ANGLE

ERECTION

Placing of Plank. Start laying plank at one corner of each independent area.

All plank shall be laid dry with marked side up and with the GROOVE side advancing. Plank shall be placed on supporting steel with joints tightly interlocked.

Where no wall supports are provided along the longitudinal edge of the starting and final rows of plank, plank in these rows shall be cut so that end joints occur over roof supports. (When supports are provided along the wall, end joints may occur off the supports.)

End joints in adjacent rows shall be staggered not less than 30 inches. Alternate rows shall be started with full units or cut pieces long enough to have bearing at not less than two supports. End of rows shall be finished similarly. The remaining rows can be started (or finished) with cut plank long enough to have not less than one support. Cut plank to fit at walls, ridges, valleys and around openings as indicated or required.

Anchorage of Plank To Supports. Each plank shall be anchored to supporting members by the following method:

- **a.** Steel Purlins—Use one galvanized clip at every point of support. Where possible, alternate position of clips so that each clip is facing in opposite direction to the next one. Secure each clip to plank with 2 nails.
- **b.** Steel Purlins—Weld metal edging of plank to supports by flowing weld from the support to the plank edging being careful not to burn holes in the edging.
- **c.** Other Type Purlins—Where clip or weld cannot be used we suggest driving nails through the metal edging on both sides of the purlin and using a wire looped from nail to nail for anchor to the purlin.
- **d.** Concrete Joists—Use power driven studs fired through the plank, 2 studs per plank at each intersection, with penetration into the joist adequate for secure attachment. If steel plates are imbedded in concrete joists use method in (b) above.
- **e.** Wood Joists—Use two 16 penny nails at each intersection of plank with purlin. Drive nails so that their heads are flush with the top surface of the plank.
- **f.** For pitches greater than 30°, standard #91 anchor clip attachment should be employed plus additional anchorage provided by ½" standard bolts spaced one per 30 square feet of roof area. See detail above.

AIA FILE 12-C

TECHNICAL INFORMATION

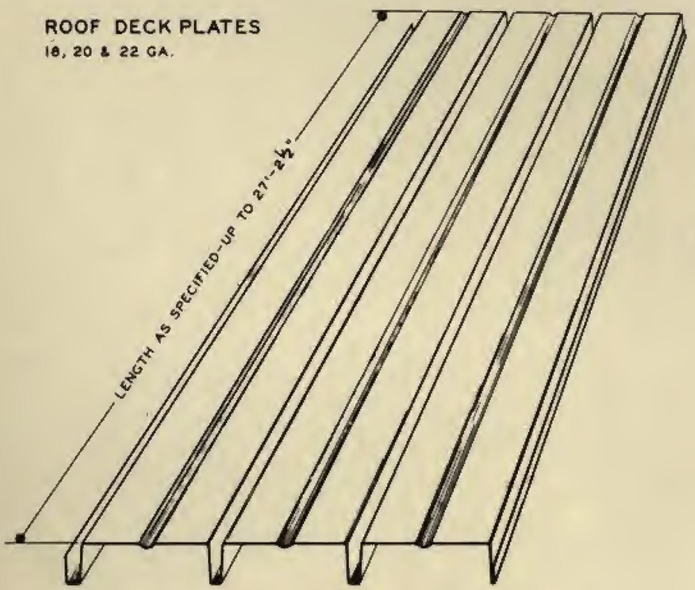
USG®
STEEL ROOF DECK

UNITED STATES GYPSUM

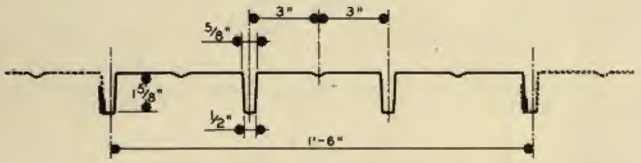
1960

AIA FILE 12-C

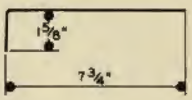
USG STEEL ROOF DECK



STANDARD STEEL ROOF DECK PLATE



TYPICAL CROSS SECTION THRU ROOF DECK PLATE



FILLER PLATE

DESCRIPTION

USG Steel Roof Decks are prefabricated units, formed by cold rolling low carbon steel sheets into ribbed type interlocking panels, ready for installation as they come to the job. USG Steel Roof Deck, ribbed panels, are made 18 inches wide, with nominally 1½" deep ribs, and in standard lengths from 5'8" to 27'-2½" inclusive. Each roof deck panel is shop painted light-tone gray by spray coating with a baked on rust inhibitive paint.

USG Steel Roof Deck panels are available in No. 18, No. 20 or No. 22 U. S. Standard gauges shop painted or galvanized.

All essential accessories such as ridge and valley plates, cover plates, cants, curbs, sump pans or plates are also available in the same shop painted or galvanized steel as shown in detailed drawings.

USG Steel Roof Deck is manufactured in accordance with the Standards and Specifications of the Metal Roof Deck Technical Institute.

FUNCTION AND UTILITY

Light Weight: USG No. 18 gauge painted steel roof deck, ribbed panels, weigh approximately 315 pounds per 100 sq. ft. of roof area, No. 20 gauge approximately 235 pounds, and No. 22 gauge approximately 200 pounds—galvanized slightly more. This light dead load permits savings in the structural steel framing.

Strength: All of the high strength of steel is used to advantage in the ribbed design of USG Steel Roof Decks. A stiffening bead is formed in the top flange between the ribs to resist warping or buckling under concentrated loads.

A table of safe total loads in pounds per sq. ft., the weight per square, the moment of inertia (I''^4), the section modulus (S''^3) and the insulation values, "U" for the complete roof including built up roof covering, is shown in the Technical Data on the opposite page.

Fire Resistance: USG Steel Roof Decks cannot burn or otherwise support combustion. For fire resistance ratings, see page three.

Durability: USG Steel Roof Decks are painted with a prime coat of rust inhibitive light-toned gray paint, baked on to give high resistance to moisture and provide additional safety against damaging rust and corrosion.

Adaptability: USG Steel Roof Decks are ideal on flat, warped and low pitched roofs. Insulation and built-up roof coverings are required.

Appearance: The painted surfaces of the deck plates and accessories, and the repeating rib pattern can provide a pleasing light reflective undersurface.

Maintenance: The prime coat gives a tough hard surface which can be washed or repainted as maintenance requires.

Low Cost: Material costs are low. Speed of erection results in low labor costs. Light dead load conserves structural steel.

LIMITATIONS OF USE

Insulation: A rigid type of insulation is required over steel roof decks under the built-up roof covering.

Acid Fumes, Excessive Temperature and Moisture Conditions: Special consideration must be given before using steel roof decks when they are exposed to:

1. Acid or acid fumes detrimental to paint or steel.
2. Excessive temperature.
3. Excessive moisture or humidity conditions.

For further information consult our nearest Industrial Sales Engineer or Architect Service Representative.

Venting of Enclosed Spaces: All enclosed spaces beneath roof decks should be adequately vented to the outside. Such venting by small louvers or openings does not appreciably effect attic temperatures. Please refer to *Heating, Ventilating, Air Conditioning Guide*, published annually by the American Society of Heating and Air Conditioning Engineers for information on venting of attic spaces. (Chapters 10 & 12).

Cantilever for Rakes and Eaves: Where maximum unsupported overhang for USG Steel Roof Deck exceeds 18", consult the nearest U.S.G. Sales Office for recommendations.

TECHNICAL DATA

Type of Span	Ga.	SAFE TOTAL LOADS IN LBS. PER SQ. FT. — PURLIN SPACING 5′0″	5′6″	6′0″	6′6″	7′0″	7′6″	8′0″	8′6″	9′0″
Continuous	18	138	114	96	82	70	61	54	48	42
	20	102	84	71	60	52	45	40	35	31
	22	86	71	60	51	44	38	34	30	—
Two Spans	18	111	91	77	65	56	49	43	38	34
	20	82	67	57	48	42	36	32	28	25
	22	69	57	48	41	35	30	—	—	—
Simple	18	111	91	77	65	56	49	41	35	31
	20	82	67	57	48	42	36	31	26	23
	22	69	57	48	41	35	30	—	—	—

PROPERTIES

Type	Wt. Lbs. Per Sq. Black	Wt. Lbs. Per Sq. Galv.	I''^4	S''^3
18 ga.	315	345	.277	.230
20 ga.	235	265	.195	.170
22 ga.	200	225	.156	.143

Insulation—"U" Value

Btu/hr./s′f/°F Diff.—INCLUDING ROOFING

None	½″†	1″†	1½″†
0.94	0.39	0.24	0.18

†Fiberboard Insul—K = .33 over steel deck

NOTE: None of these loads will produce a stress greater than 18,000 psi or a deflection due to live load greater than 1/240 of the span. A 6 psf dead load representing the weight of the deck, insulation, roofing, etc., was subtracted from total loads when determining deflections. In accordance with specifications of the Metal Roof Deck Technical Institute:

(a) Only ¾ of the width of the top compression flange for 18 gauge, and ⅝ for 20 gauge have been used as being effective in resisting bending.
(b) A moment coefficient of 1/10 has been used for 3 or more spans, and ⅛ for two spans and simple span.
(c) A deflection coefficient of 3/384 has been used for all except simple spans, and 5/384 for simple spans.

FIRE-RESISTANCE RATINGS—STEEL ROOF DECK CONSTRUCTION

Roof Materials Applied Over Steel Roof Deck	Suspended Ceilings of Metal Lath & Plaster	Rire Resistance Ratings	Authority
(a) 2″ Vermiculite concrete (or equivalent)	1″ Vermiculite—gypsum plaster on metal or wire lath	4 hrs.	National Bureau Standards Test No. 60, 1/31/49 Report No. TR 10235-2FP 2688
(b) Minimum 1¾″ insulation board of shredded wood, bonded with portland cement	1″ Vermiculite—gypsum plaster on metal or wire lath	3½ hrs.	
(c) Minimum 1″ insulation as described in item (b) above	1″ Vermiculite—gypsum plaster on metal or wire lath	3 hrs.	
(d) Minimum 1″ insulation board of felted glass fiber	1″ Vermiculite—gypsum plaster on metal or wire lath	2 hrs.	
(e) Minimum 1½″ wood fiber board insulation	1″ sanded gypsum plaster 1:2 mix	2 hrs.	N.B.S. Test No. 58 11/29/46
(f) Minimum 1½″ wood fiber and cement binder insulation	⅞″ sanded gypsum plaster 1:2 mix	2 hrs.	N.B.S. Test No. 56 11/27/45
(g) Minimum 1″ wood fiber board insulation	¾″ sanded gypsum plaster 1:2, 1:3 mix	1½ hrs.	N.B.S. Test No. 57 1/15/46

ARCHITECTURAL SPECIFICATIONS

General—All principal roof framing, including trusses, purlins, beams, framing around openings larger than 12″ in diameter, and all trimming at curbs, sills, and walls, will be done by others. See Specifications for Structural Steel.

SCOPE

Unless otherwise specified, all roof areas are to be covered with USG Steel Roof Deck. All deck is to be left complete, ready for application of the roof insulation and built-up roofing.

MATERIALS

Roof Deck Plates—Shall be of (No. 18) (No. 20) (No. 22) gauge steel having nominal 1½″ deep ribs, 6″ on centers, and made in units 18″ wide by lengths to fit purlin spaces and shall be manufactured by United States Gypsum Company.

Accessories—All cant strips, ridge and valley plates, utility angles and cover plates, etc., as indicated, shall be 20 gauge steel fabricated to sizes and shapes indicated and shall be manufactured by United States Gypsum Company.

Curbs—Shall be of (No. 18) (No. 20) (No. 22) gauge steel (Roof Deck Plates) (Sheets formed to sizes and shapes indicated).

Optional—Sump Plates where indicated shall be fabricated of 14 gauge steel sheets according to manufacturers' standards.

Paint—All USG Steel Roof Deck plates and sheet metal accessories, etc., are to have one shop coat of rust inhibitive paint, applied at the factory and oven baked to protect the steel during shipment.

ERECTION

All USG Steel Roof Deck plates and accessories are to be installed by welding in accordance with directions and placing diagrams furnished by the manufacturer, or steel deck contractor.

Optional—For use of clips in lieu of welding:

All USG Steel Roof Deck plates and accessories shall be installed with clips in accordance with directions and placing diagrams furnished by the manufacturer, or steel deck contractor.

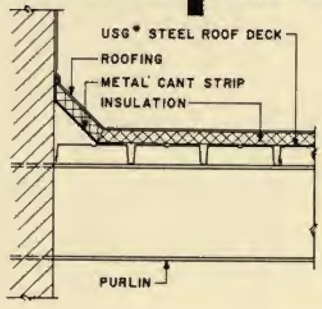
Notes to Architect:

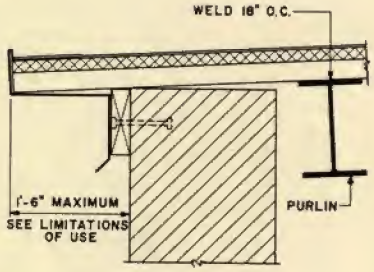
1. When USG Steel Roof Deck is installed by welding, it may also be advisable to use spacer wedges. When pitch of roof is 3″ in 12″ or greater, anchorage clips for insulation are recommended.

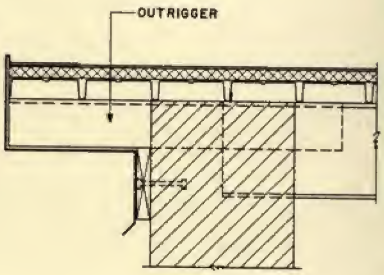
2. Galvanized steel decks (unpainted) No. 18, 20, or 22 gauge are available on specification.

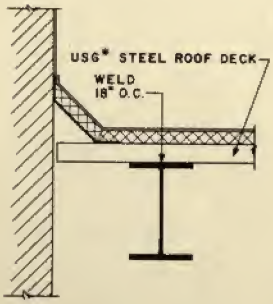
USG
STEEL ROOF DECK

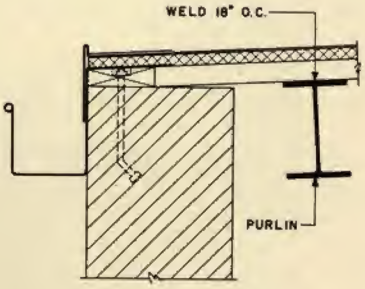
WALL DETAILS Scale 3/4" = 1'-0"

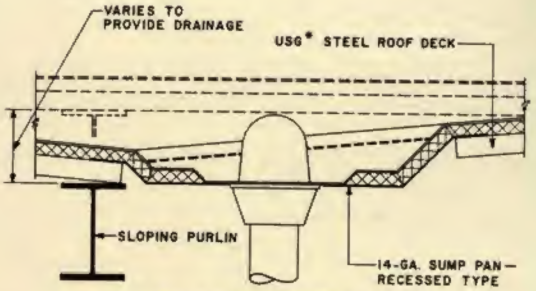






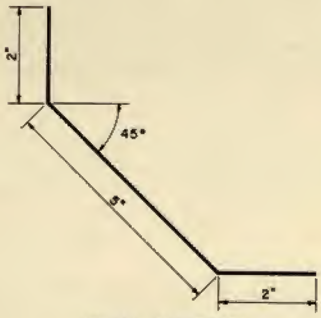




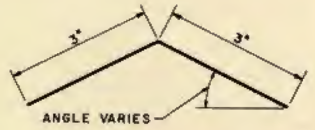


ROOF SUMP DETAIL

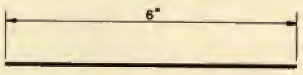
ACCESSORIES
MAX. FAB. LENGTH 10'-0"



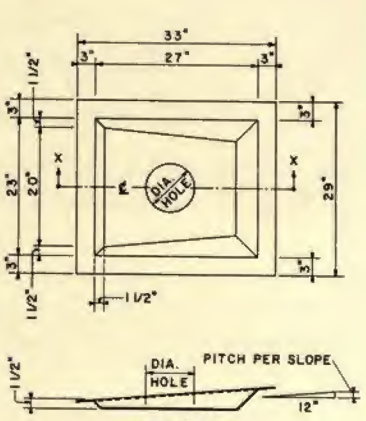
METAL CANT STRIP
20-GA.



RIDGE OR VALLEY PLATE
20-GA.



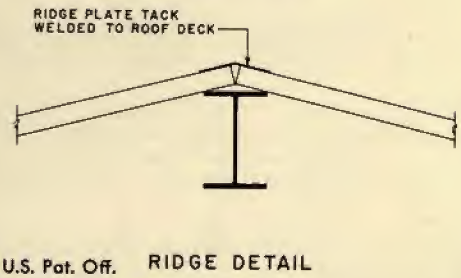
COVER PLATE
20-GA.

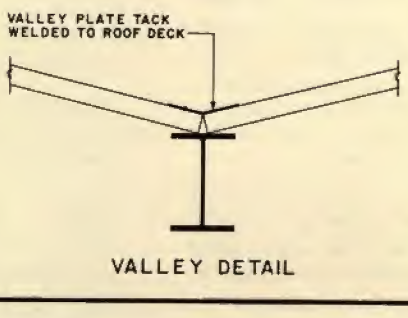


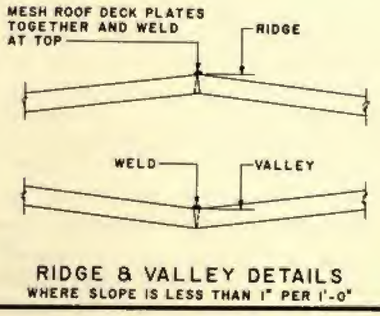
SECTION-XX

SUMP PAN-RECESS TYPE
14-GA.

MISCELLANEOUS DETAILS







*T.M. Reg. U.S. Pat. Off. RIDGE DETAIL

VALLEY DETAIL

RIDGE & VALLEY DETAILS
WHERE SLOPE IS LESS THAN 1" PER 1'-0"

New Perspectives with
Gypsum Drywall Systems

Technical Data Schedule

TECHNICAL DATA SCHEDULE

SYSTEM		CONSTRUCTION	APPROX. WEIGHT PER SQ. FT.①	OVER-ALL THICKNESS	MAXIMUM ALLOWABLE HEIGHT
USG* SOLID PARTITIONS	NOMINAL 2" SOLID	½" Regular SHEETROCK* Wallboard face layers laminated on each side of 1" USG "V" T&G Gypsum Coreboard; wood components.	8.5 lbs.	2⅛"	10'-0"
		½" SHEETROCK FIRECODE* Wallboard face layers laminated on each side of 1" USG "V" T&G Gypsum Coreboard; metal components.	8.5 lbs.	2⅛"	10'-0"
		⅝" SHEETROCK FIRECODE Wallboard face layers laminated on each side of 1" USG "V" T&G Gypsum Coreboard; metal components.	9.7 lbs.	2¼"	12'-0"
	DOUBLE	½" Regular SHEETROCK Wallboard face layers laminated on the outside of a double row 1" USG "V" T&G Gypsum Coreboard spaced apart 1⅛", minimum; metal components.	12.5 lbs.	4¼" (Otherwise varies with space established between coreboard)	10'-0"
USG METAL STUD PARTITIONS		Single layer ⅝" SHEETROCK FIRECODE Wallboard screw attached to the USG Metal Stud each side.	6.5 lbs.	4⅞"	16'-0"
		Double layer ⅝" SHEETROCK FIRECODE Wallboard, base layer screw attached – face layer laminated to the USG Metal Stud each side. Note: Technical data based on partition construction with 3⅝" (DWS-358) stud.	11.0 lbs.	6¼" (Otherwise varies with stud width and gypsum board thickness)	16'-0" (See page 4 USG Metal Stud section for allowable heights corresponding to other stud widths)
MOVABLE VAUGHAN WALLS**		2¼" T&G edge partition panel; ⅝" VAUGHAN WALLS FIRECODE Gypsum Face Panels jig laminated on each side of 1" VAUGHAN WALLS Gypsum Coreboard.	9.5 lbs.	2¼"	12'-0"†
USG CEILING and WALL FURRING	SUSPENDED CEILING	⅝" SHEETROCK FIRECODE Wallboard screw attached to the DWC Furring Channel spaced 24" c. to c.; 1½" channels, spaced at 4'-0" intervals, suspended with wire hangers at 4'-0" c. to c.; 2½" reinforced concrete slab on bar joists.	3.0 lbs. (Ceiling assembly only including 1½" channel, hanger and tie wire)	3" (Ceiling assembly only including 1½" channel support members)	
	WALL FURRING	½" and ⅝" gypsum board screw applied to the DWC Furring Channel; channels, spaced at 24" intervals, attached direct or braced to wall surface.	2.3 lbs.	1⅜"	UNLIMITED—
			(Based on ½" gypsum board thickness.) Varies with thickness of gypsum board.①		UNLIMITED—
		½" and ⅝" gypsum board screw applied to one side of the USG Metal Stud, spaced 24" c. to c., erected free standing, and located the desired distance away from wall surface.	2.5 lbs.	2⅛"	
			(Based on ½" gypsum board and 1⅝" stud.) Varies with stud size and thickness of gypsum board.①		9'-0" 12'-0"†† 16'-0"††

①Gypsum Board Weights (Approx.)

⅜"—1.50 lbs./sq. ft.	⅝"—2.64 lbs./sq. ft.
½"—2.07 lbs./sq. ft.	1"—4.15 lbs./sq. ft.

*T. M. Reg. U. S. Pat. Off.
**T. M. of Vaughan Interior Walls, Inc.

WB-441, USG, 6/60

NOTE: Refer to individual Technical Folders on each system for additional data and detailed information.

FIRE RESISTANCE RATING	FIRE TEST REFERENCE***	AVE. SOUND TRANSMISSION LOSS RATING	SOUND TEST REFERENCE***	SUGGESTED USE & COMMENTS	ESTIMATED COST▲ MARKET
1½ Hours	Ohio State University T-1175 June 26, 1959			Space separation within occupancies – conserves costly floor space.	
2 Hours	Ohio State University T-1339 April 9, 1960			Space separation where greater fire resistance is required – excellent fire resistance per wall thickness.	
2 Hours	Ohio State University T-1231 October 28, 1959	36 decibels	Riverbank Acoustical Laboratories TL 59-98 August 4, 1959		
2 Hours	Ohio State University T-1310 January 4, 1960	46 decibels	Riverbank Acoustical Laboratories TL 60-19 September 28, 1959	Party walls between occupancies; corridor partitions; mechanical chase walls – economical by comparison to other drywall partitions with equal sound reduction efficiency.	
1 Hour	Ohio State University T-1174 December 1, 1959	39 decibels	Riverbank Acoustical Laboratories TL 59-99 August 4, 1959	General space separation – good resistance to sound transmission with respect to weight of partition – can effect savings in structural design.	
2 Hours	Underwriters' Laboratories R1319-31-32 June 2, 1960	46 decibels	Riverbank Acoustical Laboratories TL 60-113 April 26, 1960	Space separation where greater fire and sound resistance required – easily and quickly constructed with same component materials as 1-hour fire rated assembly.	
1 Hour	Ohio State University T-1235 December 4, 1959	37 decibels	Riverbank Acoustical Laboratories TL 60-1 September 2, 1959	Space separation providing permanent wall performance coupled with desirable movability – simply erected and relocated.	
1½ Hours	Underwriters' Laboratories R1319-30 March 15, 1960			All ceiling areas – excellent base for any decorative treatment – preferred base for acoustical tile where greater sound isolation desired.	
MAXIMUM ALLOWABLE HEIGHT—VERTICAL FURRING					
Direct attachment of DWC Furring Channels to wall surface with suitable fasteners spaced 24" c. to c. along channel and driven alternately through each wing flange. Continuous braced attachment of DWC Furring Channels to wall by wire tying to ¾" channels positioned horizontally and spaced 4'-0" maximum; ¾" channels are attached to furring brackets spaced at 3'-0" intervals.				All interior and exterior masonry or monolithic concrete wall areas requiring suitable base for finish decoration – positive vapor barrier when foil back gypsum board used – ideal for concealing mechanical installations adjacent to walls and columns.	
Free standing 1⅝" studs Free standing 2½" studs Free standing 3⅝" studs			Studs erected in DWR Runners anchored at floor and ceiling		

▲ Consult your USG Architect Service Representative or local USG Sales Representative for estimate cost data.

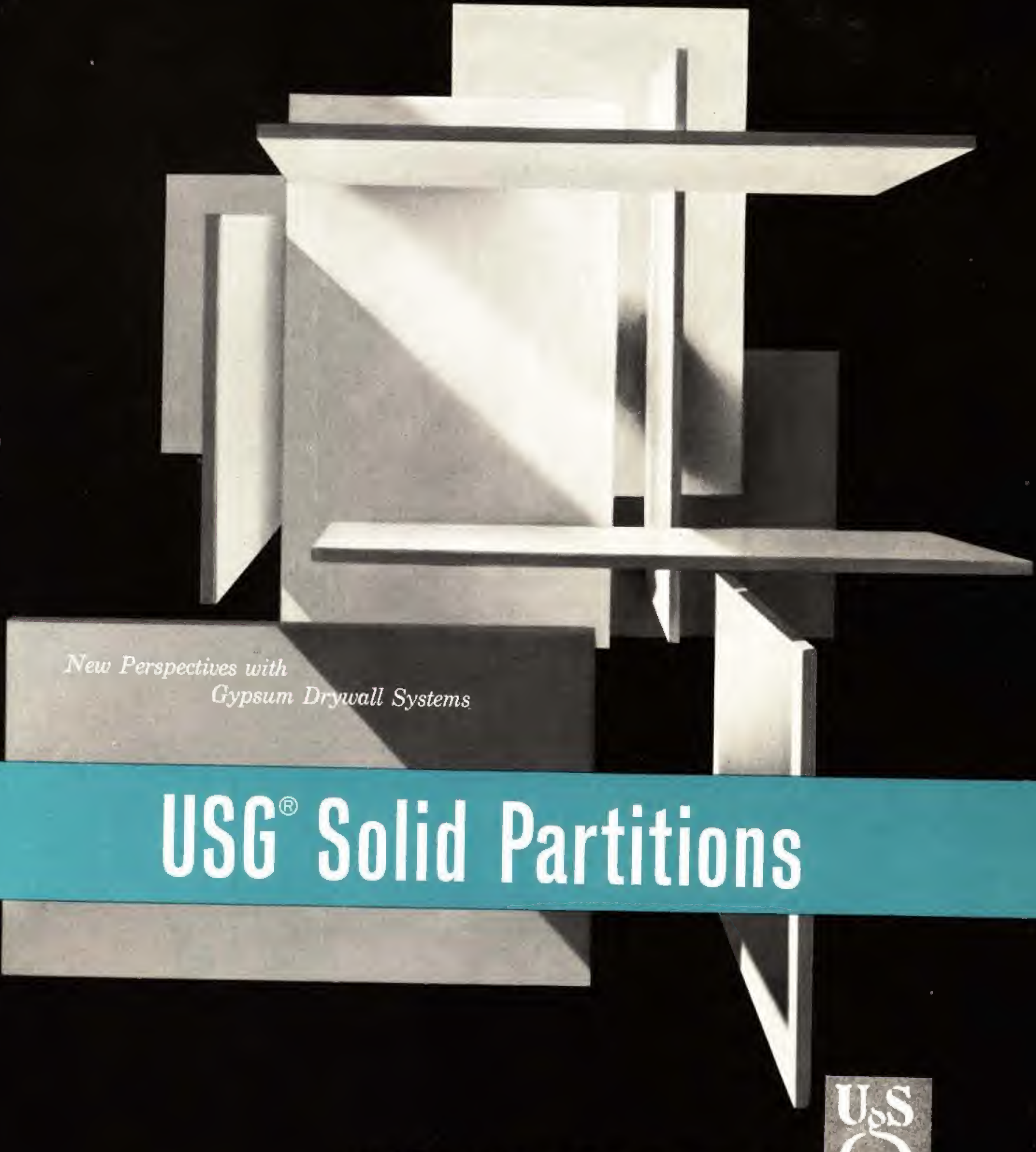
*** Complete test information available from United States Gypsum Co.

†Max. recommended height 10'-0" where flexibility is a governing design factor

††Not recommended where flexibility is a governing design factor

UNITED STATES GYPSUM

the greatest name in building

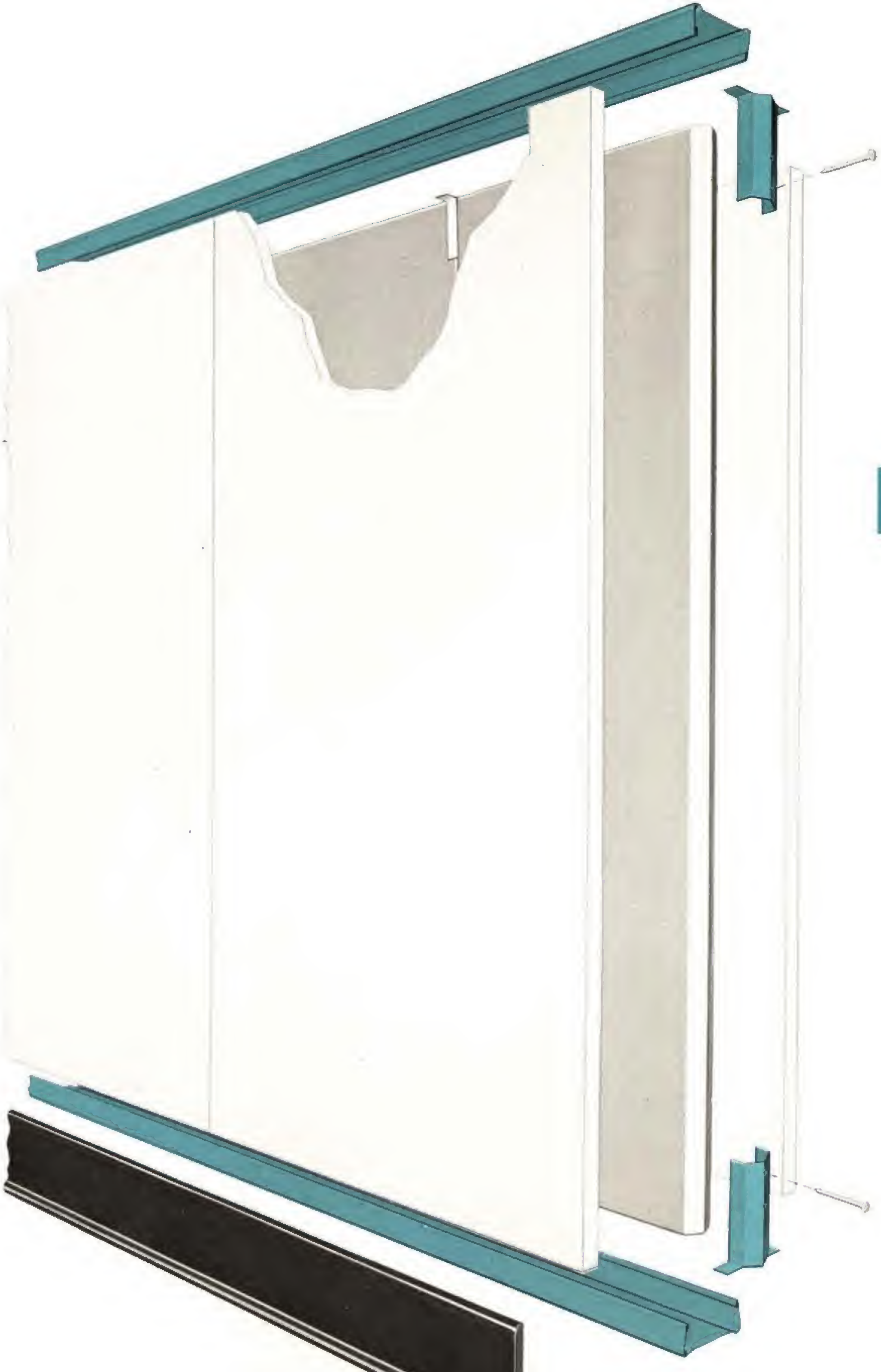


New Perspectives with Gypsum Drywall Systems

USG® Solid Partitions

UNITED STATES GYPSUM

the greatest name in building



- *1½- and 2-hour fire rating*
- *Space saving—nominal 2 inches thick*
- *Average 36 db sound transmission loss rating*
- *12 feet maximum height*

DESCRIPTION

2-INCH SOLID

The USG 2" Solid Gypsum Drywall Partition System is a non-load bearing, incombustible partition constructed in place by laminating face layers of ½" gypsum board, to both sides of a 1"-thick solid gypsum coreboard. The face layers are laminated to the coreboard by using a multi-purpose cement (normally required for joint treatment) as the adhesive. The basic construction permits the use of either wood or metal components, depending upon code restrictions and insurance requirements.

COMPONENT PRODUCTS AND ACCESSORIES:

Gypsum Board: The coreboard is a 1"-thick by 24"-wide mill-fabricated board of standard lengths composed of a fireproof gypsum core encased in strong gray liner paper on both sides and long edges. Integrally formed "V" edges facilitate accurate alignment during erection.

The face layers consist of regular and/or specialty gypsum wallboard materials, minimum ½" thick.

Accessories: Metal accessories include floor and ceiling runners, a flush and recessed metal base of special design, and a standard reveal type metal base. Various trims are available and may be used in conjunction with this assembly as distinctive design features, as job conditions may require.

Other accessories such as joint reinforcing tape and cement, and metal external corner reinforcements, are generally required to complete all partition installations.

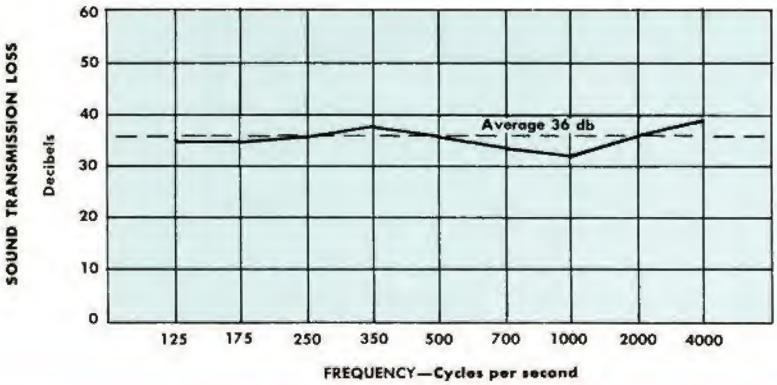
Function and Utility

FIRE RESISTANCE—The 2-inch Solid Partition consists entirely of incombustible materials, except where floor and ceiling runners of wood are used. Fire endurance and hose stream ratings have been established for the following two assemblies by a nationally-recognized fire-testing laboratory†:

1½-Hour Fire Rating: 1″ USG "V" T&G Gypsum Coreboard with ½″ regular SHEETROCK* Gypsum Wallboard laminated each side; untreated wood floor and ceiling runners; face layers laminated with PERF-A-TAPE* Cement.

2-Hour Fire Rating: 1″ USG "V" T&G Coreboard with ½″ SHEETROCK FIRECODE* laminated each side; metal floor and ceiling runners; face layers laminated with PERF-A-TAPE Cement.

SOUND TRANSMISSION—The basic partition has an average sound transmission loss rating of 36 db based on tests conducted by a nationally-recognized sound-testing laboratory†. The test results are graphically defined below.



ADAPTABILITY AND VERSATILITY—The 2-inch Solid Partition can be used in virtually every type of new construction: commercial, institutional, industrial, residential, etc.

It is excellent for permanent space subdivision in the remodeling and modernization of existing buildings. During remodeling, because of the simplicity and the speed of erecting this system, normal work can proceed with a minimum of disturbance. Partitions are completely job-erected, making layout changes less costly.

This partition can be constructed in double partition form to accommodate mechanical installations and provide greater resistance to sound transmission (see Double Solid Partition).

May also be installed free-standing. (See Limitations).

Partition facings serve as a base for any decorative treatment, such as paint, wallpaper, fabrics and plastic films.

FIXTURES—The 2-inch Solid Partition is structurally sufficient to support light- and heavy-duty fixtures such as lavatories, kitchen and bathroom cabinets, etc. The core panel can be easily routed, cut, or panels may be spaced apart to provide raceways for electrical wiring or conduit installations.

ECONOMY—The 2-inch Solid Partition is easily installed, and can be erected faster than most other types of partitions. Utilizes low-cost materials and a minimum number of components. In addition, reduced thickness over conventional partition systems saves costly floor space.

LIMITATIONS

1. Non-load-bearing

2. Limiting height: (Based on partitions with complete perimeter restraint and no openings. Where openings occur in short runs, consider limiting height as that corresponding to "over 18 ft." width between restraints.)

Width between restraints	2″ Solid Partition	2¼″ Solid Partition††
Up to 12′	12′	14′
12′ to 18′	11′	13′
Over 18′	10′	12′

††(When ⅝″ SHEETROCK Wallboard used as face layers.)

3. Free-standing partition not to exceed 10′ in length unless right angle partitions intersect between vertical end restraint. (Ask your U.S.G. Architect Service Representative for details of construction.)

4. Partition should not be used where exposed to abnormal moisture or excessively high humidity.

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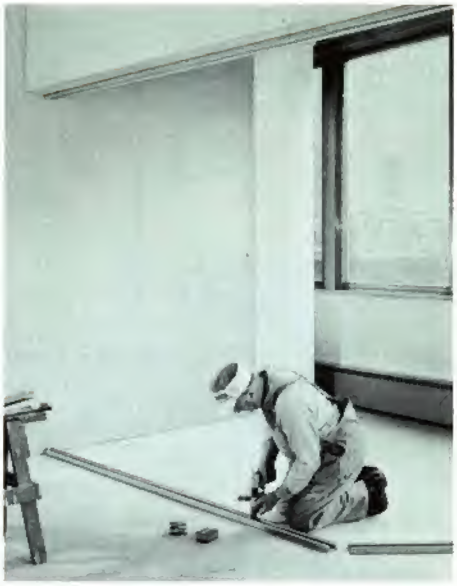
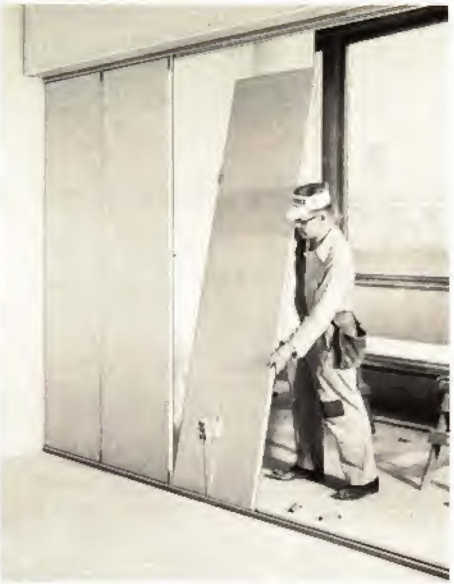
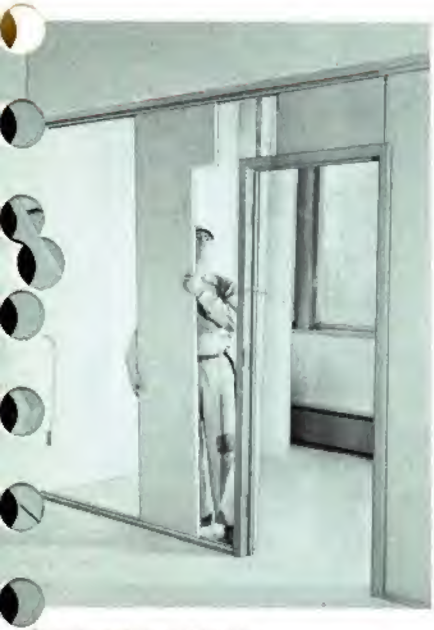
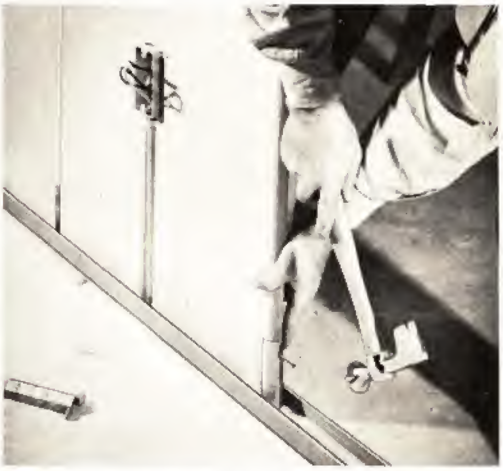
†The name of the testing laboratory is available upon request.

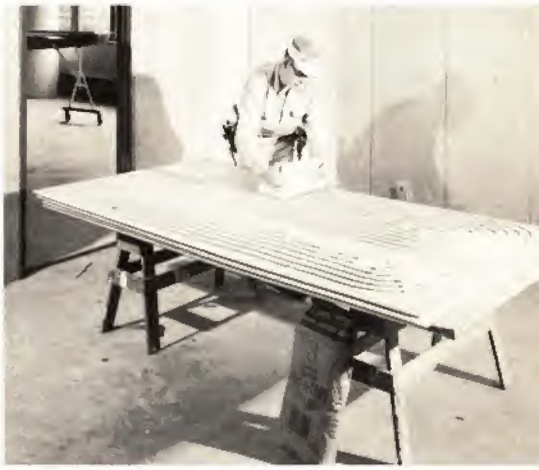
*T.M. Reg. U.S. Pat. Off.

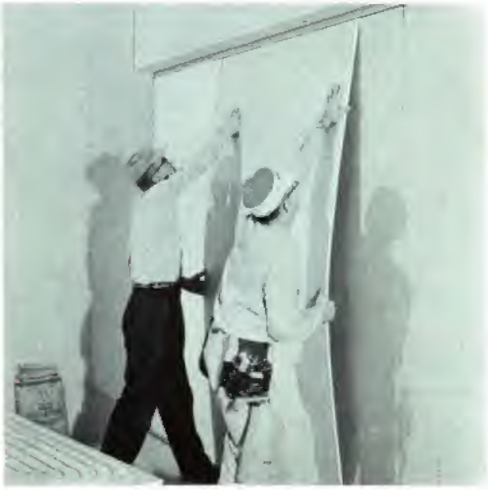

DWR-218 Runners are attached to ceiling and floor.


1" coreboard installed in floor and ceiling runners.


Coreboard is cut to fit around door frames.


USG Core Spacer Clip centers coreboard in runners and insures accurate engagement of vertical "V" T&G edges.


PERF-A-TAPE Cement adhesive applied to back of face layers.

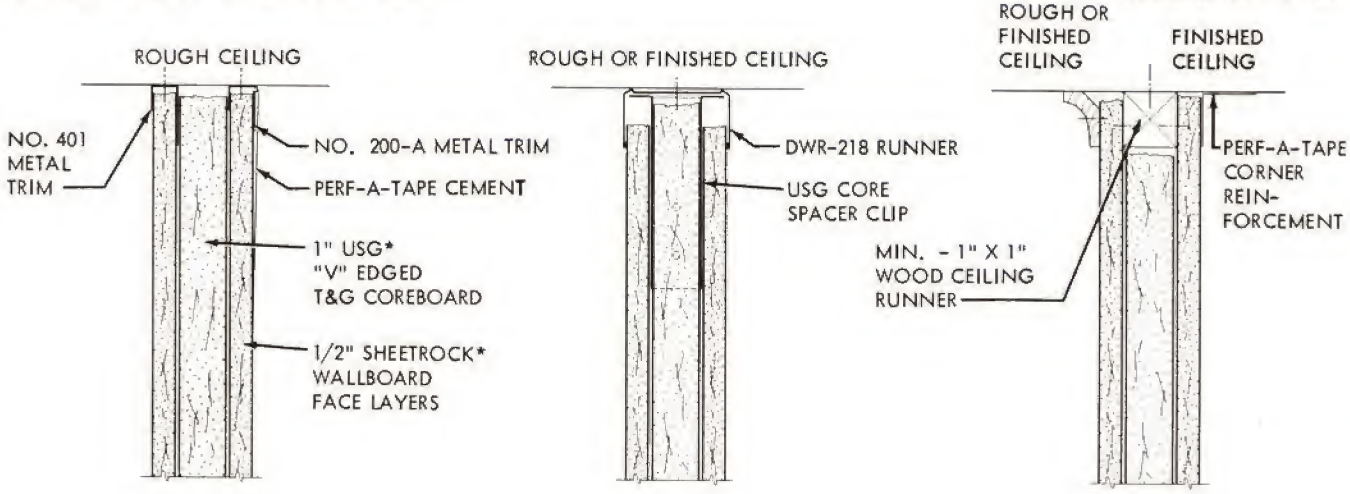

Face layers are laminated to coreboard.

Vertical face layer joints are temporarily nailed at third points through scrap gypsum board blocks, to insure proper adhesion and alignment.

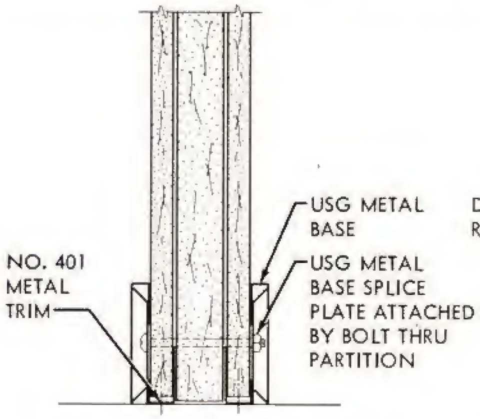
ARCHITECTURAL DETAILS • 2-INCH SOLID

CEILING ATTACHMENTS

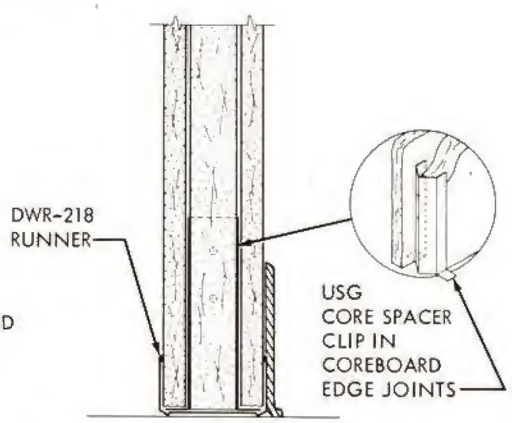
Scale: 3"=1'-0"


ROUGH CEILING
NO. 401 METAL TRIM
NO. 200-A METAL TRIM
PERF-A-TAPE CEMENT
1" USG* "V" EDGED T&G COREBOARD
1/2" SHEETROCK* WALLBOARD FACE LAYERS
ROUGH OR FINISHED CEILING
DWR-218 RUNNER
USG CORE SPACER CLIP
ROUGH OR FINISHED CEILING
FINISHED CEILING
MIN. - 1" X 1" WOOD CEILING RUNNER
PERF-A-TAPE CORNER REIN-FORCEMENT

FLOOR ATTACHMENT & BASE

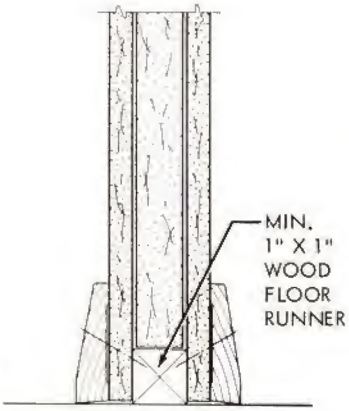


REVEAL METAL BASE

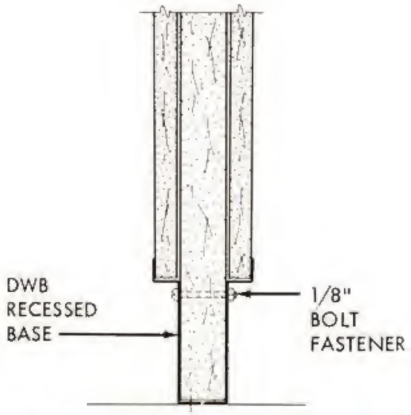


EXPOSED RUNNER

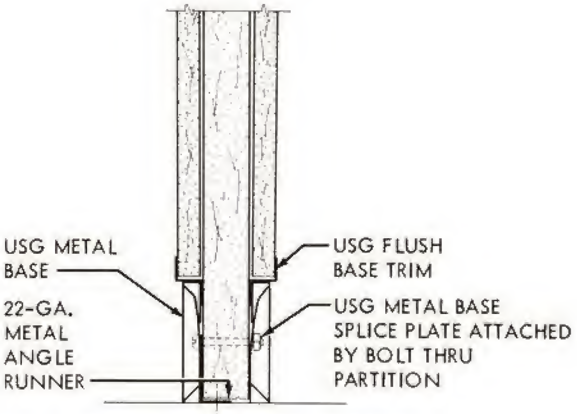
RUBBER OR VINYL BASE



WOOD BASE



RECESSED METAL BASE

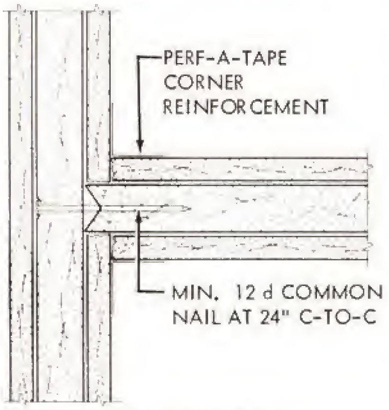

USG METAL BASE
22-GA. METAL ANGLE RUNNER
USG FLUSH BASE TRIM
USG METAL BASE SPLICE PLATE ATTACHED BY BOLT THRU PARTITION

FLUSH METAL BASE

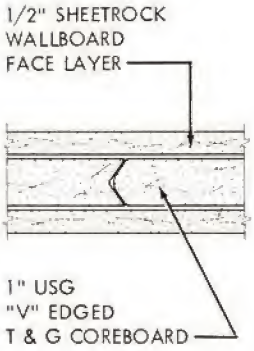
2-INCH SOLID

WALL PLAN SECTIONS

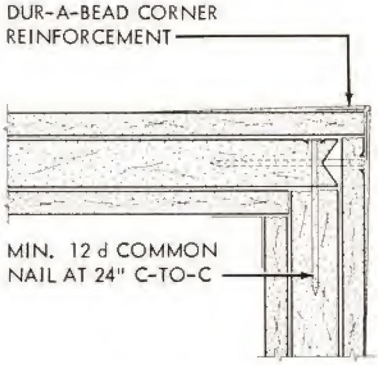
Scale: 3"=1'-0"


PERF-A-TAPE CORNER REINFORCEMENT
MIN. 12 d COMMON NAIL AT 24" C-TO-C

PARTITION INTERSECTION

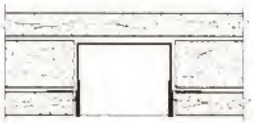

1/2" SHEETROCK WALLBOARD FACE LAYER
1" USG "V" EDGED T & G COREBOARD

COREBOARD EDGE JOINT

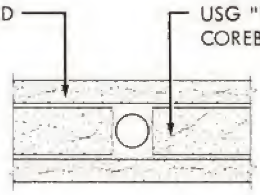

DUR-A-BEAD CORNER REINFORCEMENT
MIN. 12 d COMMON NAIL AT 24" C-TO-C

CORNER

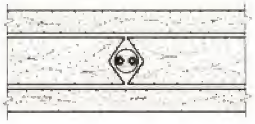
ELECTRICAL SERVICE



OUTLET BOX

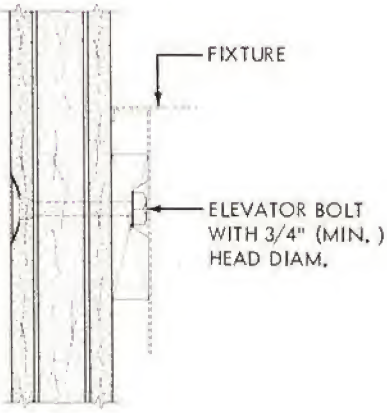


RIGID CONDUIT

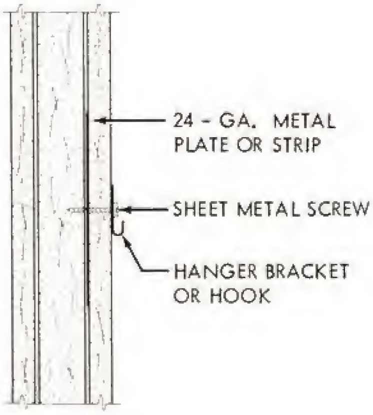


FLEXIBLE CABLE

FIXTURE ATTACHMENTS



HEAVY

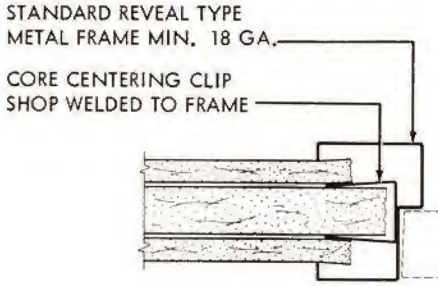


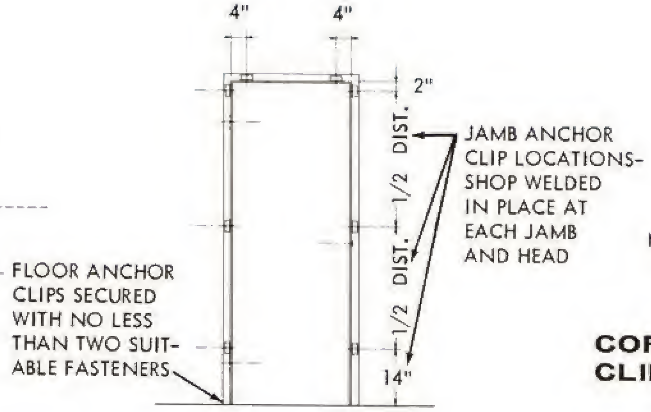
LIGHT

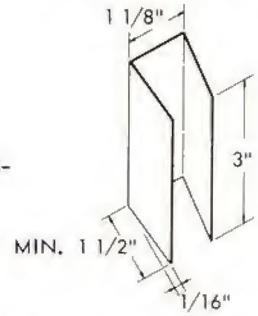
ARCHITECTURAL DETAILS • 2-INCH SOLID

METAL DOOR FRAME

Scale: 3"=1'-0"


STANDARD REVEAL TYPE METAL FRAME MIN. 18 GA.
CORE CENTERING CLIP SHOP WELDED TO FRAME


4"
4"
2"
1/2 DIST.
1/2 DIST.
14"
JAMB ANCHOR CLIP LOCATIONS- SHOP WELDED IN PLACE AT EACH JAMB AND HEAD
FLOOR ANCHOR CLIPS SECURED WITH NO LESS THAN TWO SUITABLE FASTENERS

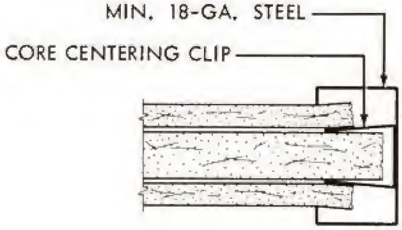


JAMB

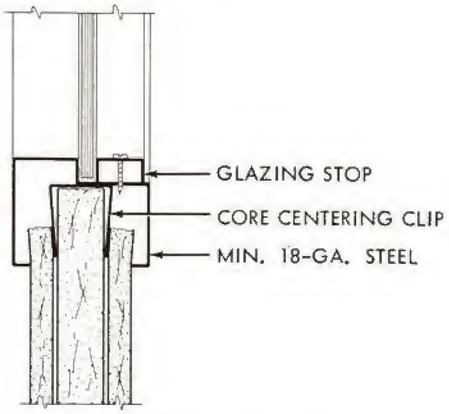
ELEVATION
(CROSS SECTION THRU FRAME)

CORE CENTERING CLIP (18-GA. MIN.)

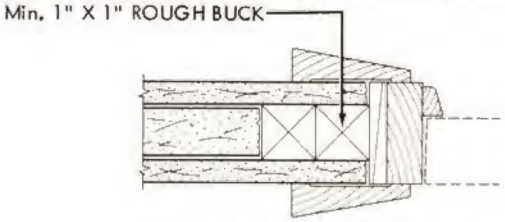
MISCELLANEOUS



METAL PARTITION TERMINAL



METAL BORROW LIGHT FRAME



WOOD DOOR FRAME

SPECIFICATIONS 2-INCH SOLID

SCOPE

Furnish all labor, materials and equipment necessary to construct all solid gypsum board partitions, with related metal components and accessories, as required, in accordance with the specifications and drawings.

GENERAL CONDITIONS

In cold weather and during the period of laminating the gypsum boards and finishing the joints, temperatures within the building shall be maintained uniformly within the range of 45° to 70°F. Adequate ventilation shall also be provided to eliminate excessive moisture within the building during this same period.

All materials, as specified below, shall be delivered to the job in their original, unopened containers or bundles; stored in a place providing protection from damage and exposure to the elements.

The installation and application of all materials shall be in accordance with the latest printed directions or specifications of UNITED STATES GYPSUM.

MATERIALS

All gypsum board products, joint treatment materials, corner bead, metal trim and accessories shall be as manufactured by UNITED STATES GYPSUM, unless otherwise indicated.

A. Coreboard—1" thick, 24" wide, USG "V" T&G edge Gypsum Coreboard, lengths as required.

B. Face Boards—½" thick, 48" wide, Tapered Edge SHEETROCK Wallboard, and/or SHEETROCK FIRECODE, as required.

C. Laminating Adhesive—PERF-A-TAPE Cement (embedding type) or All Purpose Ready Mixed PERF-A-TAPE Cement.

D. Joint Treatment—PERF-A-TAPE Joint System.

E. Corner Bead—#101 DUR-A-BEAD*, #100 PERF-A-BEAD*

F. Metal Trim—#401 Metal Trim, #200A Metal Trim.

G. Metal Accessories—DWR-218 Runner, Core Spacer Clip, Recessed Base, Metal Base, Metal Base Splice Plate, and Flush Base Trim.

*T.M. Reg. U.S. Pat. Off.

ERECTION & LAMINATION

Floor and ceiling runner tracks shall be accurately aligned and securely attached with suitable fasteners to floor and ceiling constructions at 24" centers, in accordance with the approved partition layout or the drawings. (Note to Architect: Spacing of attachment for ceiling runner may be increased to 32" c.c., maximum, where the runner track is to be attached to flat concrete slabs or nailed to wood framing or blocking above.)

Coreboard shall be cut accurately to fit in floor and ceiling runners, and installed vertically; a core spacer clip shall be inserted between the flanges of both the floor and ceiling runner tracks and shall engage the edge of the coreboard at each location; clips shall then be nailed to each coreboard before successive coreboard panels are installed. Where partitions intersect, coreboard panels shall be nailed together with 12d nails spaced 24" o.c. vertically.

All metal door and window (see Related Inclusions) frames shall be spot grouted at the location of core centering clips, after coreboard is installed.

Face boards shall be cut to the proper size for the full floor-to-ceiling dimension. Laminating adhesive, mixed in strict accordance with the directions of the manufacturer, shall be applied to the back of face boards in the prescribed manner. Face boards shall then be laminated to coreboard using moderate pressure to insure adequate bond. Vertical abutting joints in the face board shall be offset from those of the coreboard by at least three inches. At third points along vertical joints, temporary nails shall be driven through scrap blocks of gypsum board directly into the joint to insure adequate joint alignment.

All face board joints and internal angles formed by the intersections of walls and ceilings, where required, shall be treated with joint reinforcing tape and cement. Metal trim shall be used at the ends of face boards at their intersection with masonry walls and finished ceilings, as required.

Work done by this contractor shall be coordinated properly with that to be done by other trades. Coreboards and face boards shall be cut neatly to fit around all outlets and switch boxes. Suitable fastener anchorage shall be provided as required for the attachment of shelves and cabinets.

COMPLETION

This contractor shall be responsible for the removal of all of his materials and equipment from the job after completion of his work and the finished partition shall be left ready to receive decoration.

NOTES: Related Inclusions

Door and Window Frames—Under the appropriate section of the specifications indicate that metal door and borrow light frames shall be formed of not less than 18-gauge steel, shop primed. Anchorage to the floor shall be by two power activated anchors, or equivalent attachment, through a clip, minimum 14-gauge steel, at each jamb. Clips shall be shop-welded to trim flanges. For best results, anchor inserts (core centering clips) of minimum 18-gauge steel, shall be shop-welded in each jamb and head in accordance with details on page 8.

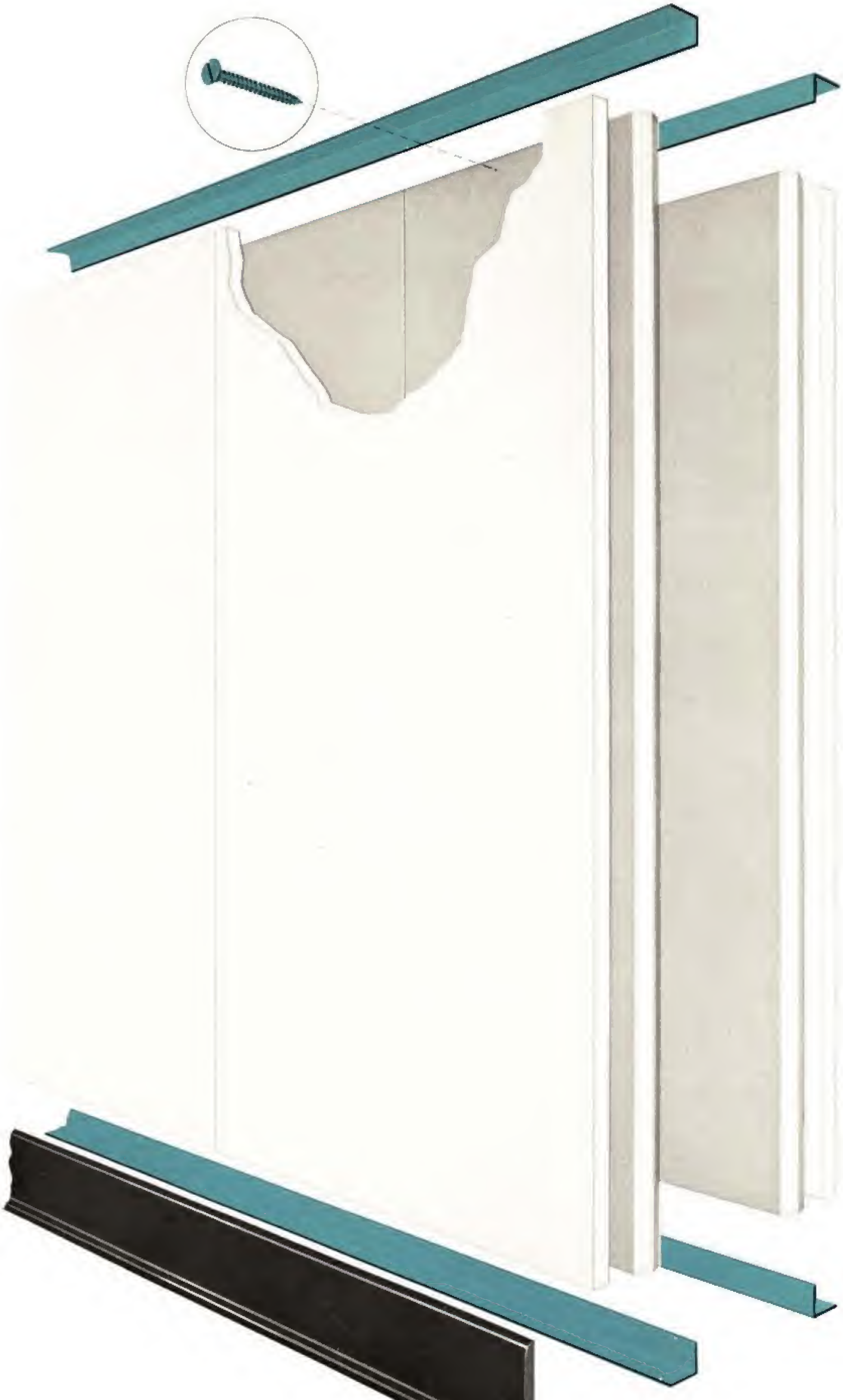
Door frame struts, when required, shall be 1" x ¼" hot rolled steel bar stock.

In construction where struts are not used, temporary bracing shall be used to level and plumb frame until partition is erected.

Where wood door or borrow light frames are required, the nominal 1" x 1" wood runner detailed for floor and ceiling runners shall be used for the rough buck. In the case of door frames, the jamb section of the rough buck may serve as a strut and should extend from floor to ceiling and be securely toe-nailed to runners.

Electrical Installation

The depth of electrical boxes shall not exceed 1½", and should be so noted under the appropriate section of the specifications.



- *2-hour fire rating*
- *Average 46 db sound transmission loss rating*
- *10 feet maximum height*
- *Lightweight—12.5 lbs. per square foot*

DESCRIPTION

DOUBLE SOLID

The USG Double Solid Gypsum Drywall Partition assembly consists essentially of the same components required for the USG 2″ Solid Gypsum Drywall construction. It differs in the use of a double row of 1″ gypsum coreboard, spaced a specified distance apart, with gypsum wallboard face layers laminated only to the outside surface of each row of coreboard. This versatile construction is designed for use, primarily, in conjunction with the 2″ solid partition, for party or corridor walls where greater sound transmission loss is a design requirement; where greater core widths are needed for pipe chase enclosures and other mechanical installations; and where building codes call for greater fire resistance.

SPECIFICATIONS DOUBLE SOLID**

(**The sections covering Scope, General Conditions, Materials and Completion under specifications for the USG 2-Inch Solid Gypsum Drywall Partition are the same for the USG Double Solid Gypsum Drywall Partition.)

ERECTION & LAMINATION

Floor and ceiling runners shall be accurately aligned and securely attached with suitable fasteners at 24″ centers to floor and ceiling constructions. The shape, size and gauge of the runners shall be determined by the intended use of the partition, i.e., party or corridor walls, or pipe chase enclosures, and shall be as detailed in the drawings. Runners shall be so shaped or spaced to provide a minimum of 1⅛″ space between 1″ coreboards (to achieve 46 db sound reduction).

All metal door frames (See Related Inclusions) shall be located and installed prior to the installation of coreboard. The installation of metal borrow light frames shall be installed in accordance with drawing layout as coreboard erection proceeds.

The installation of coreboard shall begin at the door frame by engaging the vertical edge in the centering clips in each jamb. Place cut-to-fit coreboard over metal frame header by engaging edge in centering clips and attaching to ceiling runners with No. 8 x 1¼″ sheet metal screws at 24″ centers through pre-drilled holes.

Coreboard shall then be accurately cut to fit between floor and ceiling, positioned vertically, and fastened to the vertical flanges of both floor and ceiling runners with sheet metal screws (24″ c. to c.) through pre-drilled holes.

(To complete specification for the Double Solid Partition refer to Specifications—2″ Solid Partition, page 9, which covers cutting, adhesive application and erection of face boards; and coordination of work with other trades.)

NOTES:

Related Inclusions

Reference to related inclusions following the Specifications—2″ Solid Partition shall also apply to the Double Solid Partition with the following exceptions:

1. For the best results, metal frame core centering clips shall be of minimum 18-gauge steel and shall conform to the details of location and type that appear on page 15.

2. The use of metal door frames with structural bar (1″ x ¼″ hot rolled steel) ceiling struts, extending from minimum 16″ below head of frame in each jamb to ceiling, are recommended.

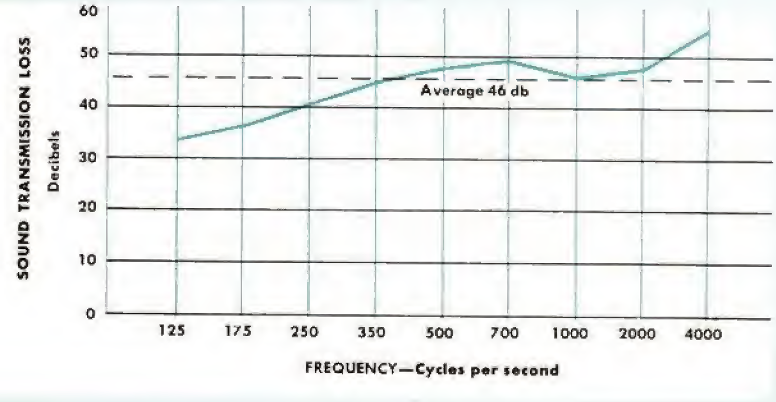
3. Electrical convenience outlet and switch boxes of up to 2½″ in depth may be used with this partition construction.

Function and Utility

FIRE RESISTANCE—The double Solid Partition consists entirely of incombustible materials, except where floor and ceiling runners of wood are used. A fire endurance and hose stream rating for the assembly has been established by a nationally-recognized laboratory†.

2-Hour Fire Rating: This system consists of a double row of 1″ USG "V" T&G Gypsum Coreboard spaced a minimum 1⅛″ apart; ½″ regular SHEETROCK Wallboard laminated to each outside surface of the coreboard with PERF-A-TAPE Cement as the laminating adhesive; metal floor and ceiling runners.

SOUND TRANSMISSION LOSS—The basic construction has an average sound transmission loss rating of 46 db based on tests conducted by a nationally-recognized sound testing laboratory†. The test results are graphically defined below.



ADAPTABILITY AND VERSATILITY—May be used for party and corridor walls in apartments, office buildings, schools, motels, dormitories, etc.; for pipe chase enclosures in virtually all types of building construction. Satisfies most design and job conditions. Component materials readily adapt to any module or dimension.

Provides the same advantages as other gypsum drywall construction, such as speed of erection and installation, without any undue amount of clutter or mess.

LIGHT WEIGHT—The completed partition weighs approximately 12.5 lbs. per square foot—appreciably less than masonry partitions of the same thickness.

ECONOMY—Low cost and simple conponent materials, speed of erection, ease and flexibility in providing for mechanical installations result in extremely favorable cost factors. The low weight of the partition may result in structural design savings.

LIMITATIONS

1. Non-load-bearing.
2. Allowable maximum height:

Width between restraint	Max. ceiling height
Up to 10′	10′—0″
10′ to 14′	9′—0″
Over 14′	8′—0″

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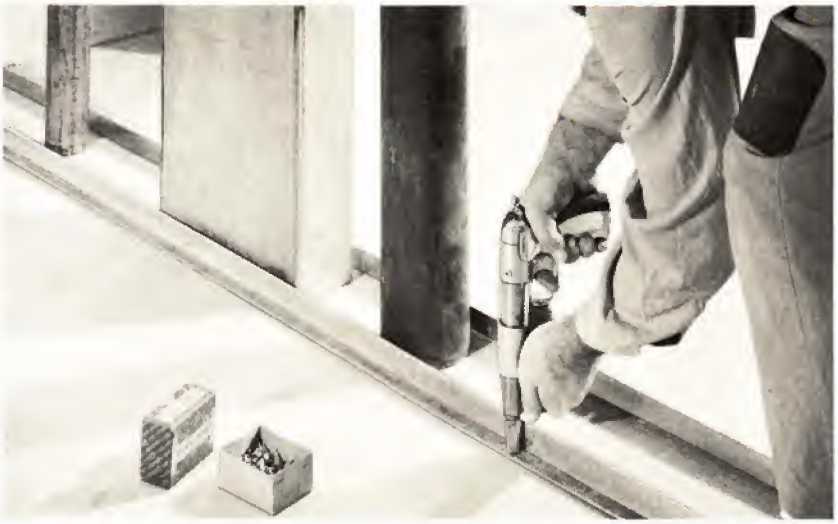
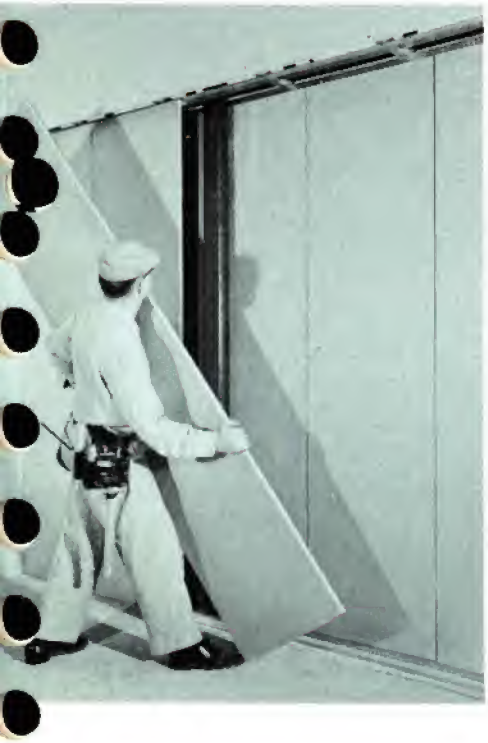
†Name of testing laboratory available upon request.

INSTALLATION DOUBLE SOLID

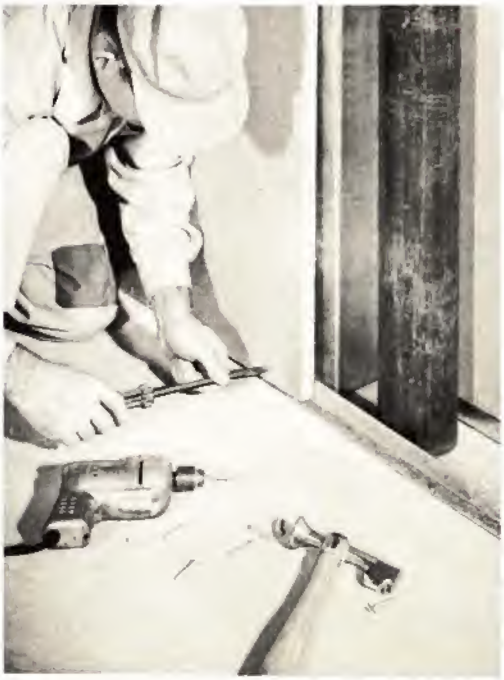
Base runners are anchored in place according to layout.



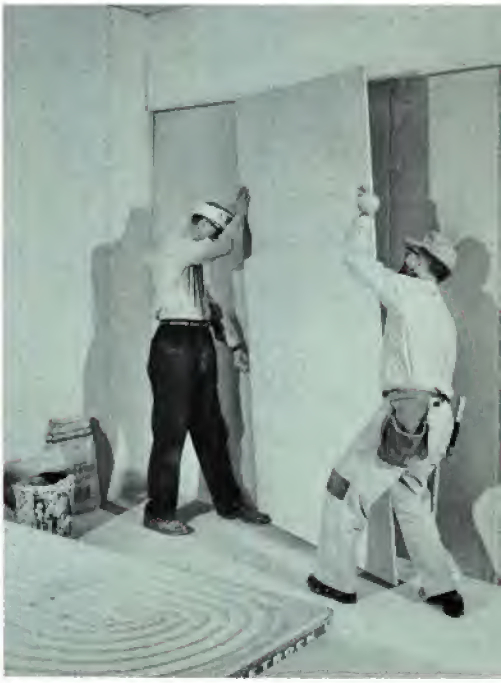


Coreboard is attached to runners which are appropriately spaced to accommodate mechanical installation, where required.

Coreboard panels are screw-anchored to runners.

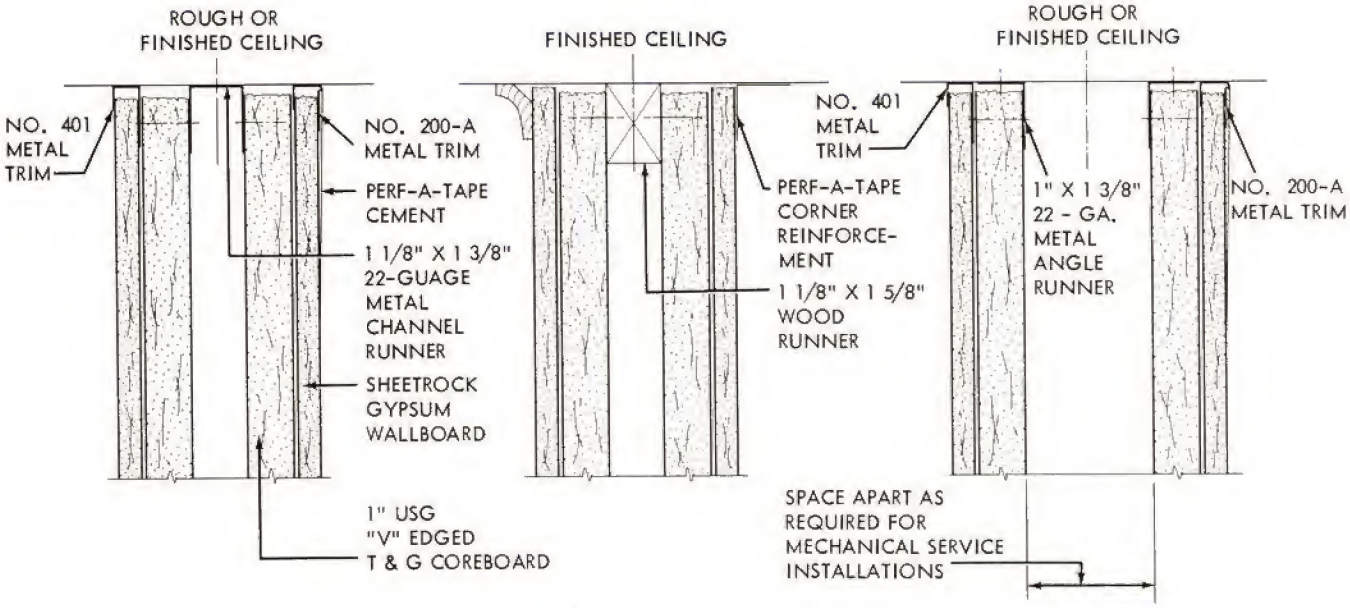


Face layers of gypsum wallboard are adhesively applied to coreboard.

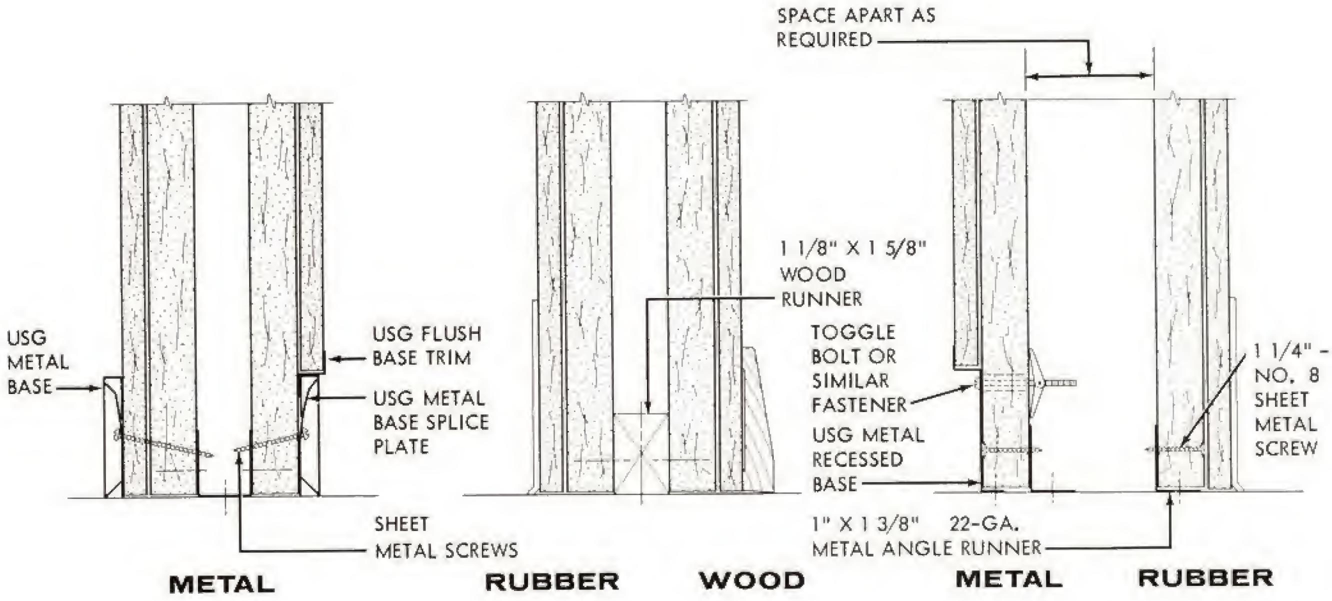


CEILING ATTACHMENTS

Scale: 3"=1'-0"

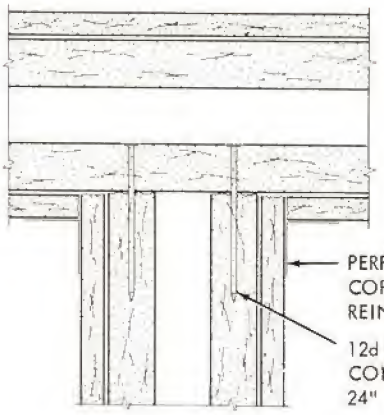

ROUGH OR FINISHED CEILING
NO. 401 METAL TRIM
NO. 200-A METAL TRIM
PERF-A-TAPE CEMENT
1 1/8" X 1 3/8" 22-GUAGE METAL CHANNEL RUNNER
SHEETROCK GYPSUM WALLBOARD
1" USG "V" EDGED T & G COREBOARD
FINISHED CEILING
PERF-A-TAPE CORNER REINFORCE-MENT
1 1/8" X 1 5/8" WOOD RUNNER
ROUGH OR FINISHED CEILING
NO. 401 METAL TRIM
1" X 1 3/8" 22 - GA. METAL ANGLE RUNNER
NO. 200-A METAL TRIM
SPACE APART AS REQUIRED FOR MECHANICAL SERVICE INSTALLATIONS

FLOOR ATTACHMENTS & BASES

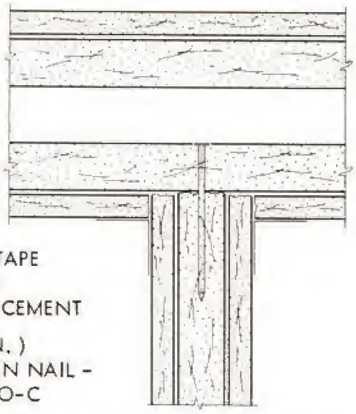

SPACE APART AS REQUIRED
USG METAL BASE
USG FLUSH BASE TRIM
USG METAL BASE SPLICE PLATE
SHEET METAL SCREWS
1 1/8" X 1 5/8" WOOD RUNNER
TOGGLE BOLT OR SIMILAR FASTENER
USG METAL RECESSED BASE
1" X 1 3/8" 22-GA. METAL ANGLE RUNNER
1 1/4" - NO. 8 SHEET METAL SCREW
METAL
RUBBER
WOOD
METAL
RUBBER

INTERSECTING WALLS

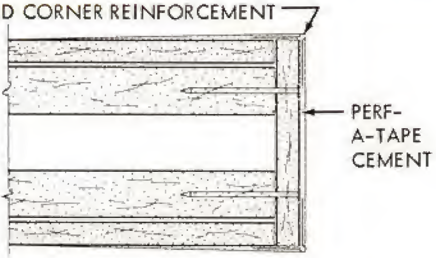
Scale: 3"=1'-0"


PERF-A-TAPE CORNER REINFORCEMENT
12d (MIN.) COMMON NAIL - 24" C-TO-C

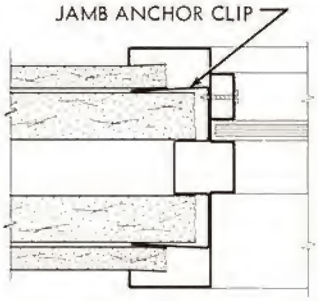
DOUBLE SOLID



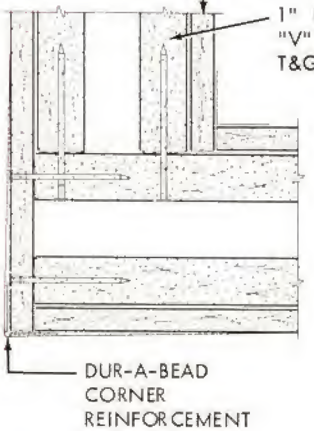
DOUBLE SOLID & 2" SOLID



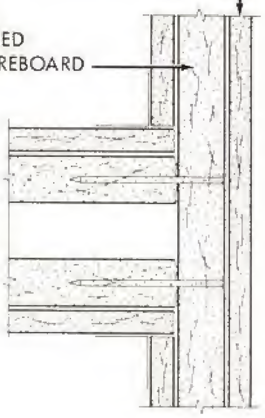
PARTITION TERMINAL



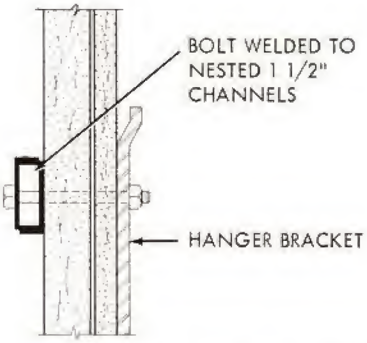
BORROWED LIGHT-JAMB


SHEETROCK GYPSUM WALLBOARD
1" USG "V" EDGED T&G COREBOARD
DUR-A-BEAD CORNER REINFORCEMENT

DOUBLE SOLID

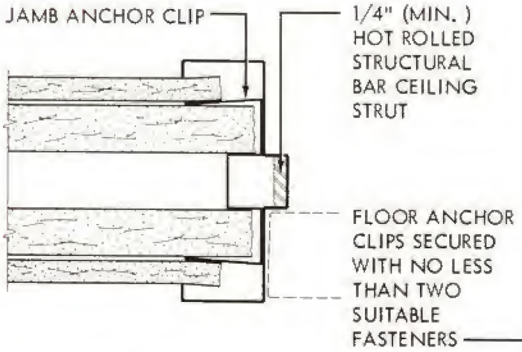


2" SOLID & DOUBLE SOLID

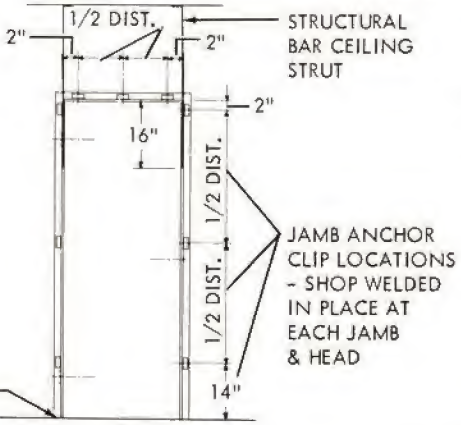


FIXTURE ATTACHMENT

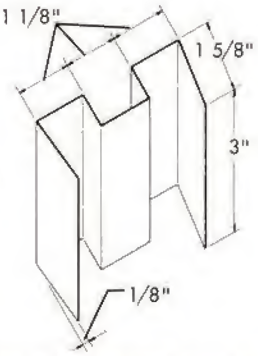
METAL DOOR FRAME


JAMB ANCHOR CLIP
1/4" (MIN.) HOT ROLLED STRUCTURAL BAR CEILING STRUT
FLOOR ANCHOR CLIPS SECURED WITH NO LESS THAN TWO SUITABLE FASTENERS

JAMB


1/2 DIST.
2"
2"
STRUCTURAL BAR CEILING STRUT
2"
16"
1/2 DIST.
1/2 DIST.
JAMB ANCHOR CLIP LOCATIONS - SHOP WELDED IN PLACE AT EACH JAMB & HEAD
14"

ELEVATION
CROSS SECTION THRU FRAME



JAMB ANCHOR CLIP

USG Solid Gypsum Drywall Partitions

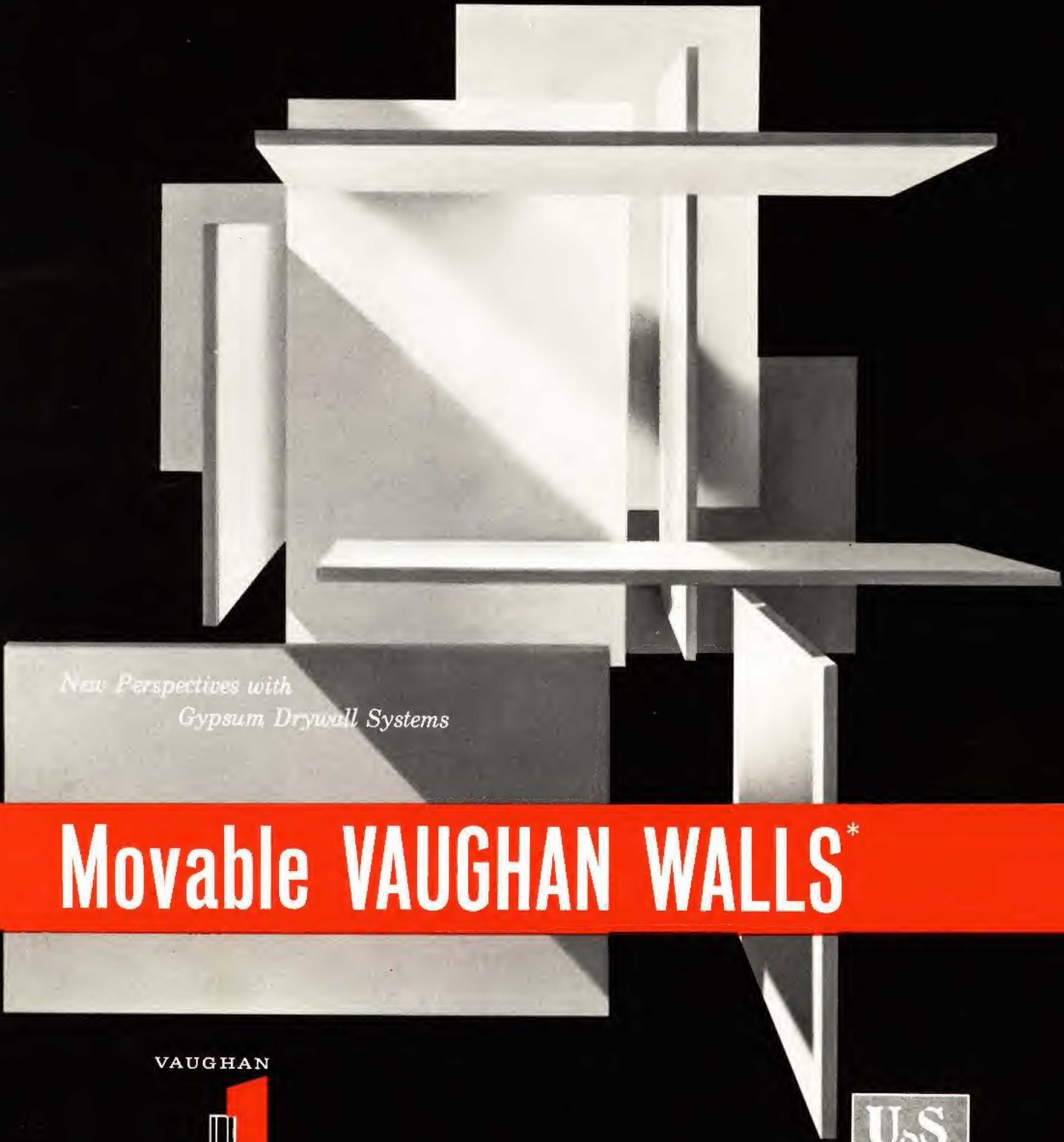
- 2-INCH SOLID
- DOUBLE SOLID

UNITED STATES GYPSUM

the greatest name in building

UNITED
STATES
GYPSUM

WB-383 USG 5/60 Printed in U



New Perspectives with
Gypsum Drywall Systems

Movable VAUGHAN WALLS*

VAUGHAN
*
WALLS

UNITED STATES GYPSUM

the greatest name in building

UNITED
STATES
GYPSUM

ADEMARK OF VAUGHAN INTERIOR WALLS, INC.

- *One hour fire rating*
- *37 decibel sound transmission loss*
- *12′ maximum height†*
- *2¼″ thick Gypsum*
- *24″ modular panels*

DESCRIPTION

Movable VAUGHAN WALLS

VAUGHAN WALLS are non-load-bearing movable partitions consisting of two basic components: modular gypsum panels and floor and ceiling runners. Panels up to 12′ high, 24″ wide, are formed of three layers of U.S.G. gypsum wallboard laminated on the job into a 2¼″ thickness. The panels interlock with tongue-and-groove edges and are erected in the runners which in turn are attached to floor and ceiling. No studs or intermediate posts are required. Closure plates are screwed to the runners and secure the panels in place.

Panel edges are beveled to feature joints. External corners are finished with metal reinforcing and joint cement. Internal corners are finished with standard joint system.

Metal components such as runners, door and borrowed light frames, etc., are available in both steel and aluminum. They can be used to combine the panels with a variety of building materials including glass, wood veneer, plastic films and decorative metal.

The extreme simplicity of VAUGHAN design speeds erection; makes relocation a job any building maintenance crew can handle with virtually 100% salvage.

†*Recommended limiting height 10′ where flexibility is a major design factor.*

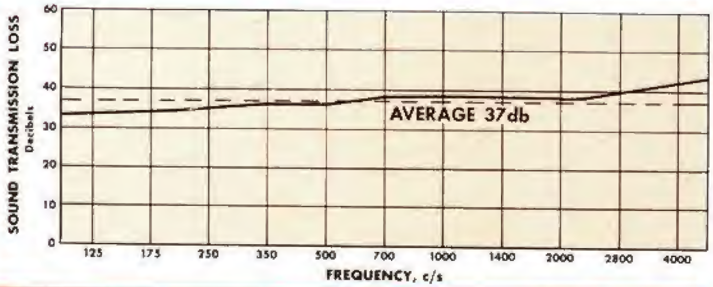
Movable VAUGHAN WALLS

Function and Utility

Incombustibility—Movable VAUGHAN WALLS consist of steel or aluminum and gypsum wallboard . . . all recognized incombustible materials.

Fire Resistance Rating—VAUGHAN WALLS with U.S.G. Gypsum Wallboard have successfully passed one-hour fire resistance tests conducted by a nationally recognized laboratory.

Sound Transmission Loss Rating—VAUGHAN WALLS with U.S.G. Gypsum Wallboard more effectively reduce sound transmission than many permanent partitions in common use. The continuous panel construction eliminates costly field packing required in other movable partitions.



This chart is based on sound rating tests conducted by a nationally recognized laboratory.

These figures and average rating should not be compared to sound ratings obtained from tests at the same laboratory conducted prior to December 1956 without adjustment. For comparison, add 5 D.B. to average result obtained after the above date.

Economy—Tailor-made Movable VAUGHAN WALLS are job laminated from locally stocked materials. Unexpected job problems or changes in layout are easily handled without costly delays in job progress. The simplicity and speed of erection, coupled with almost 100% salvageability make VAUGHAN WALLS outstandingly economical.

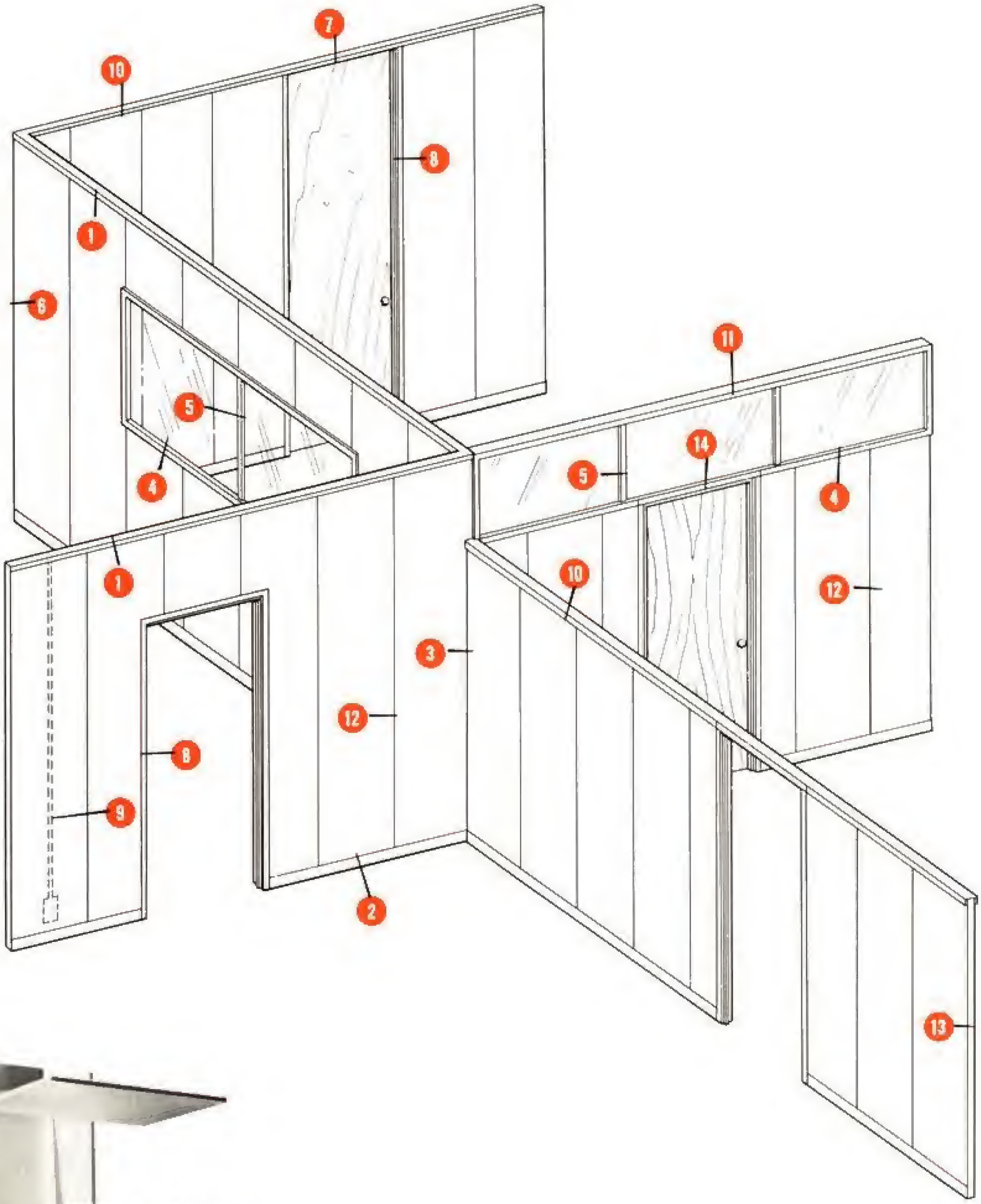
Electrical Wiring—The one-inch core of the panel is routed during the job-lamination process to accept electrical wiring and outlet boxes. This permits extreme flexibility in location of all utility and service requirements.

Adaptability—VAUGHAN WALLS may be used in new construction or for modernizing old buildings. They form any partition—cornice height or ceiling height, and offer complete flexibility in locating glazed panels and doorways. They require no expansion or control joints.

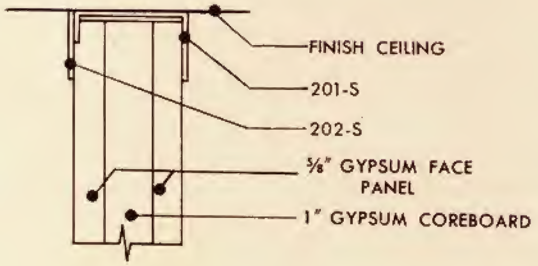
LIMITATIONS

1. VAUGHAN WALLS are intended to be used only as non-load bearing walls.
2. Maximum height is 12′.†
3. Maximum unsupported run for less than ceiling height partitions is 14′.
4. They should not be used where normally exposed to excessive moisture or humidity.

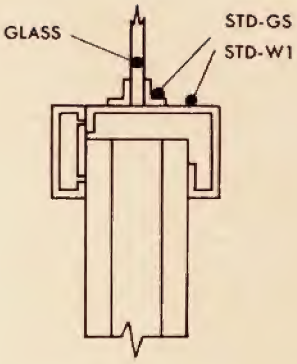
† Recommended limiting height 10′ where flexibility is a major design factor.


7
10
8
1
6
5
4
11
14
5
4
1
10
12
3
12
8
9
2
13

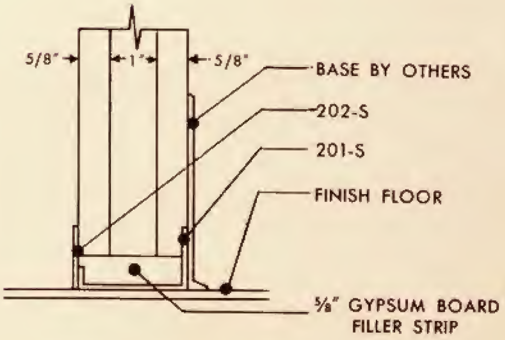
STEEL DETAILS—QUARTER SCALE



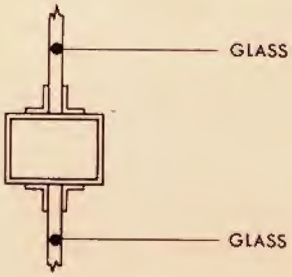
CORNICE
SECTION 1



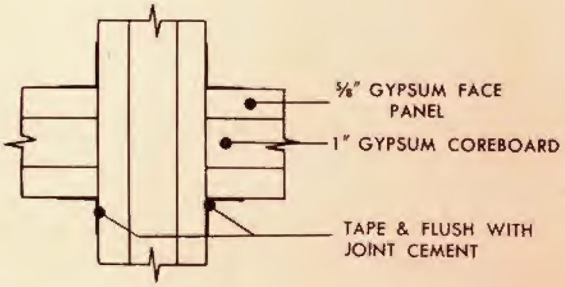
WINDOW HEAD AND SILL
SECTION 4



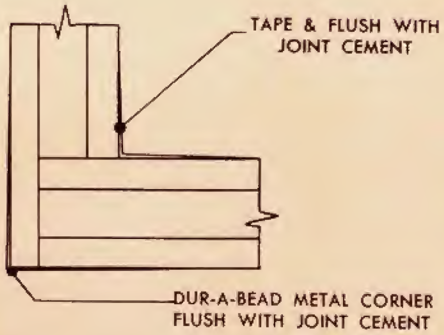
FLOOR
SECTION 2



WINDOW MULLION
SECTION 5

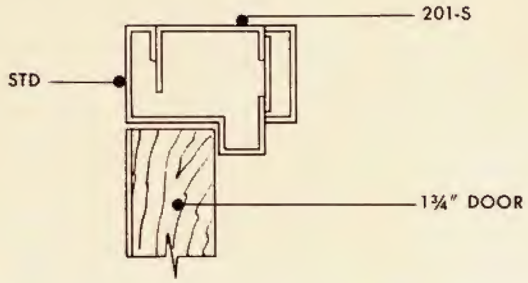


INTERSECTION
SECTION 3

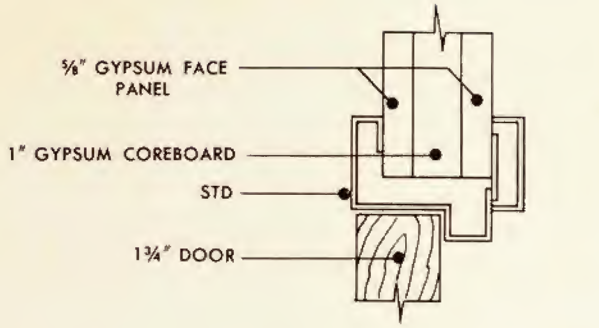

TAPE & FLUSH WITH JOINT CEMENT
DUR-A-BEAD METAL CORNER FLUSH WITH JOINT CEMENT

CORNER
SECTION 6

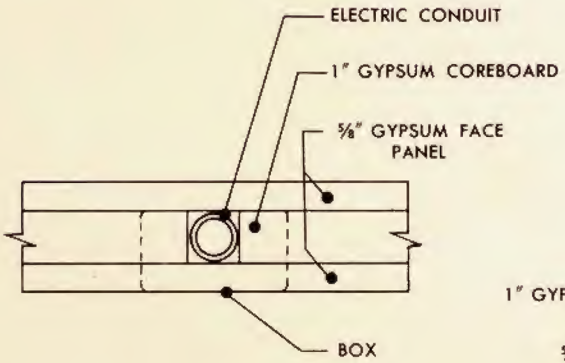
STEEL DETAILS—QUARTER SCALE



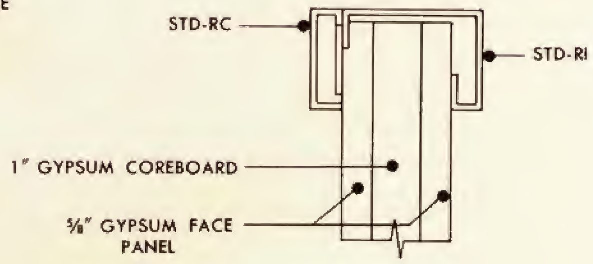
DOOR HEAD
SECTION 7



DOOR HEAD AND JAMB
SECTION 8

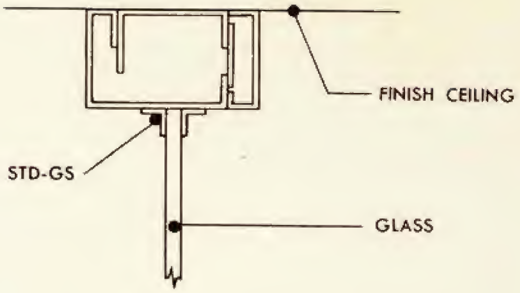


ELECTRICAL PANEL
SECTION 9

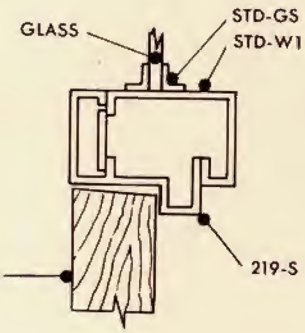


PARTITION CAP
SECTION 10

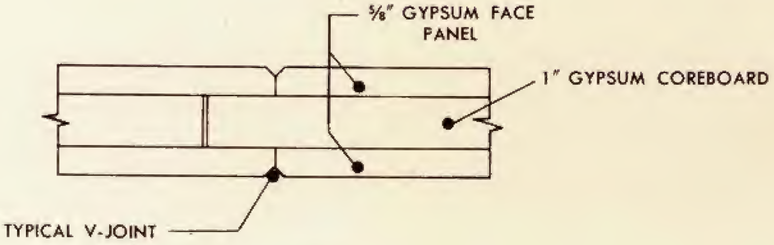
STEEL DETAILS—QUARTER SCALE



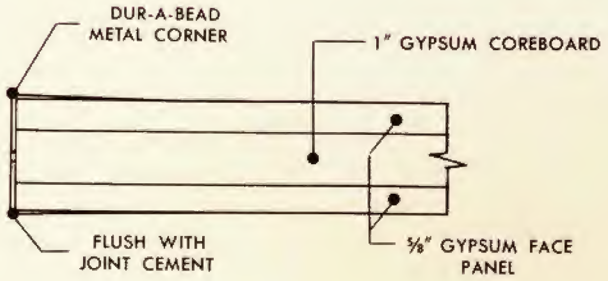
BORROWED LIGHT
SECTION 11



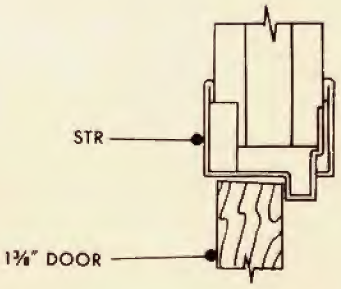
DOOR HEAD AND
BORROWED LIGHT
SECTION 14



PANEL JOINT
SECTION 12

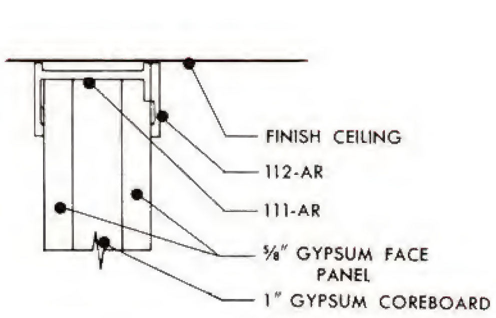


FINISHED END
SECTION 13

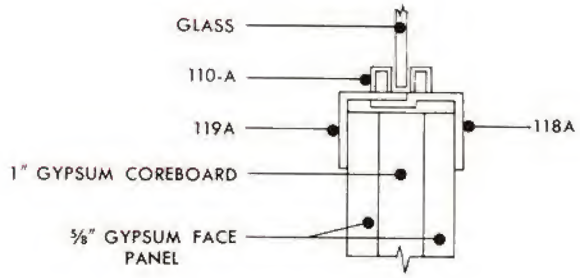


FLUSH DOOR FRAME
FOR 1⅜″ DOOR
ALTERNATE SECTION 8

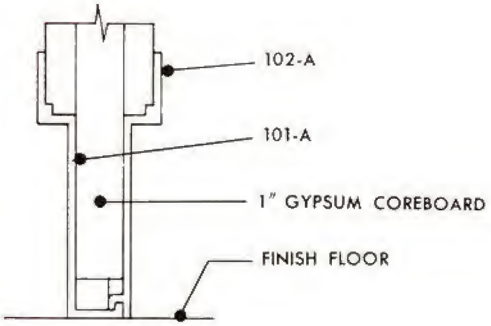
ALUMINUM DETAILS—QUARTER SCALE



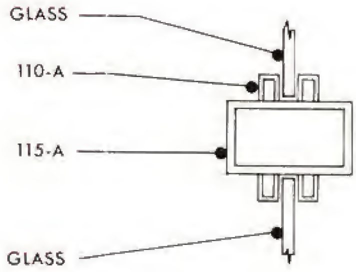
CORNICE
SECTION 1



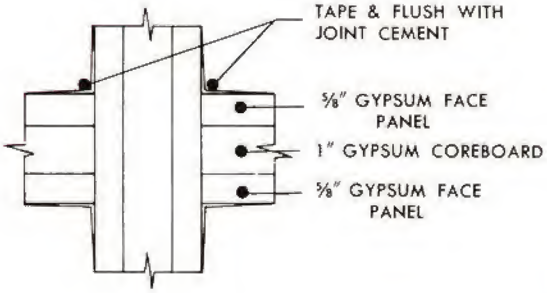
WINDOW HEAD AND SILL
SECTION 4



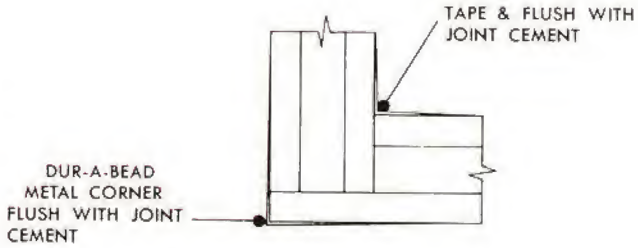
FLOOR
SECTION 2



WINDOW MULLION
SECTION 5

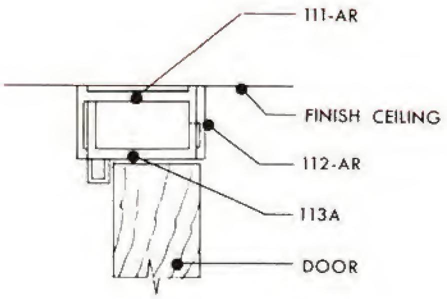


INTERSECTION
SECTION 3

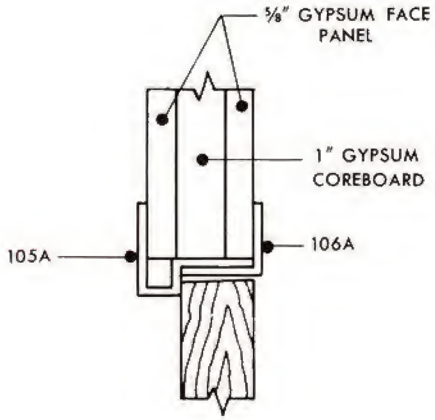

TAPE & FLUSH WITH JOINT CEMENT
DUR-A-BEAD METAL CORNER FLUSH WITH JOINT CEMENT

CORNER
SECTION 6

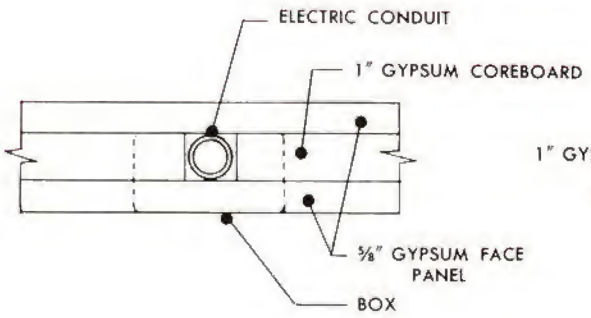
ALUMINUM DETAILS—QUARTER SCALE



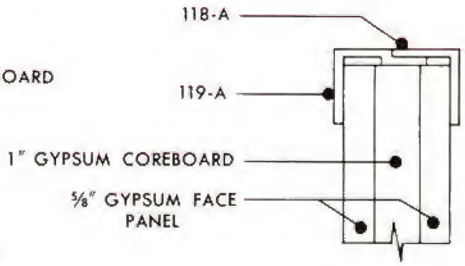
DOOR HEAD
SECTION 7



DOOR HEAD AND JAMB
SECTION 8

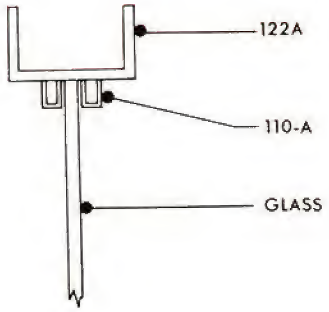


ELECTRICAL PANEL
SECTION 9

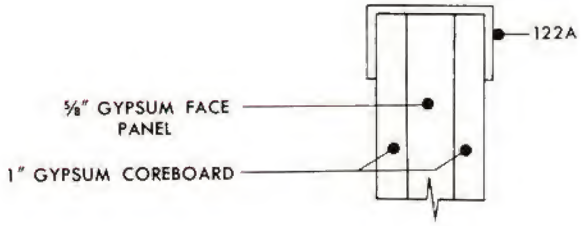


PARTITION CAP
SECTION 10

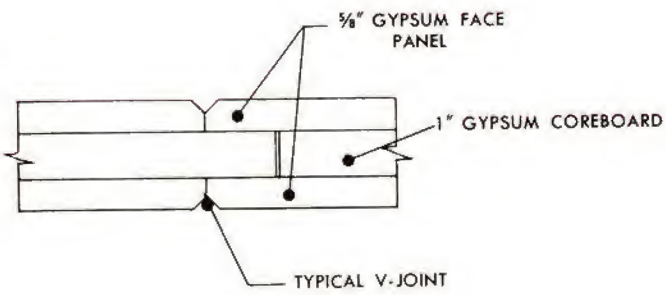
ALUMINUM DETAILS—QUARTER SCALE



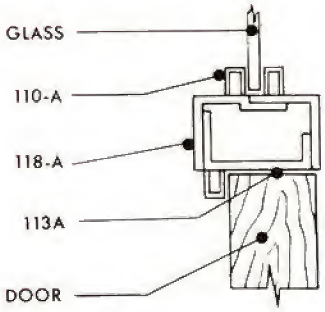
BORROWED LIGHT
SECTION 11



FINISHED END
SECTION 13



PANEL JOINT
SECTION 12



DOOR HEAD AND
BORROWED LIGHT
SECTION 14

SPECIFICATIONS

NOTE TO ARCHITECTS — At your option, the furnishing and installation of base trim, doors, door-mutes, hardware, glass, glazing and painting pertinent to the movable partition may be made a part of this specification. If you exercise this option, such work should be so specified as to its requirements in the partition section.

I. GENERAL

All Movable Vaughan Walls shall be installed by an Authorized Erector. Temperatures within the building shall be above a constant minimum of 40 degrees Fahrenheit during lamination and erection of partition panels. When required, heat shall be furnished by...

Erection of partition panels shall not begin until erection of exterior walls and glazing or temporary covering of exterior openings provides complete protection from outside weather. Coreboard and face panels shall not be stored where they will be subjected to continuous or extreme exposure to excess moisture or temperature extremes.

II. WORKMANSHIP

Vaughan Walls shall be installed by skilled craftsmen under the supervision of an individual who has had on-the-job training satisfactory to Vaughan. Complete partitions shall be fully movable, rigid, plumb, clean, free from defects and ready for decoration

III. SCOPE

The Authorized Erector shall furnish all labor, materials and equipment necessary to install Movable Vaughan Walls in accordance with the plans and as specified herein.

IV. MATERIALS

Partition panels shall be jig-laminated to form 24″ wide panels (nominal); they shall consist of Vaughan Walls parts including 1″ Gypsum Coreboard faced both sides with ⅝″ Firecode* Gypsum Face Panels as manufactured specifically for this purpose by United States Gypsum. Panel thickness shall be 2¼″.

Metal components shall be furnished by the Authorized Erector and shall comply with standards approved by Vaughan.

a. Steel

(1) Floor and ceiling runners and closure plates shall be roll formed from paint lock type steel of not less than the following gauges:

Runners	18 gauge	Closures	16 gauge

(2) Door and window frames shall be two piece 1″x1″ hollow metal construction, fabricated of steel of not less than the following gauges:

Frames	16 gauge	Hinge reinforcements	9 gauge
Closures	14 gauge	Strike reinforcements	12 gauge

All door and window frames shall receive a factory prime coat of paint.

b. Aluminum shall be extruded from 6063-T5 alloy, anodized satin finish. Commercial tolerances shall apply. Minimum thickness shall be .125″, except (a) glazing stops which are .031″ and (b) ceiling runners and closure plates which are a combination of .094″ and .125″. Fasteners shall be aluminum, or cadmium plated, when exposed.

Adhesive shall be Vaughan Walls Brand Cement.

Finishing accessories (reinforcing tape, joint cement, filling compound and metal corner beads) shall be as manufactured by United States Gypsum, Company, or equal.

V. INSTALLATION

The partitions shall be accurately laid out, and the floor and ceiling runners securely anchored. Such attachment shall assure complete security of the partition and future removal and relocation without excessive damage to the floor or ceiling construction.

Gaskets (foam type polyethylene or similar) shall be installed between all ceiling runners and ceiling surfaces and elsewhere as required by job conditions. Such gaskets shall be 1¾″ wide and with minimum thickness of ⅛″ for steel installations and 3/16″ for aluminum installations.

Filler blocks shall be of ⅝″ gypsum wallboard cut to size and laid in all floor runners.

Partition panels shall be formed and laminated in special jigs to insure a constant dimension at the tongue and groove. The coreboard shall be offset from the face panels to form a groove 1½″ deep. Panels shall be installed in floor and ceiling runners to form tight joints with true vertical and horizontal alignment.

Door and window frames shall be assembled level and plumb at locations indicated on the plans.

Closure plates shall be screwed securely to short legs of floor and ceiling runners. Full length closure plates shall be used where practical. Cut ends shall be square and clean, fitting neatly to adjacent plates, trim, door frames, etc.

Joint cement shall be applied to beveled joints of panels, to insure proper bridging of paint. Excess cement shall be wiped from the joint, leaving the true "V" bevel.

Metal corner bead shall be securely installed at all external corners. Not less than two coats of joint cement shall be applied over beads and each coat feathered out onto panel faces.

Reinforcing tape and joint cement shall be applied as recommended by United States Gypsum to all internal corners and intersections where flush finishing is desired or metal trim is not specified.

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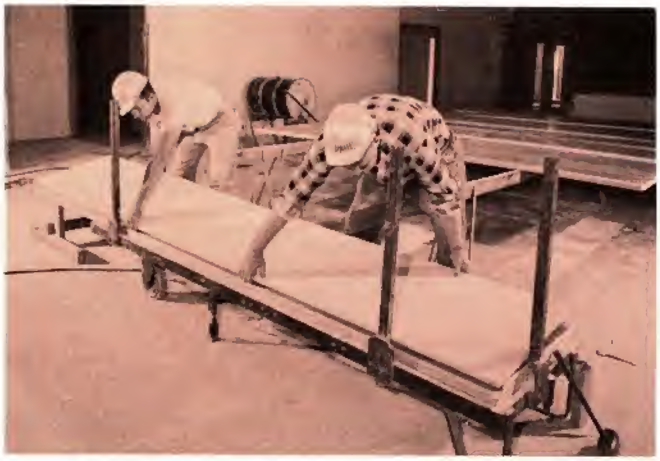
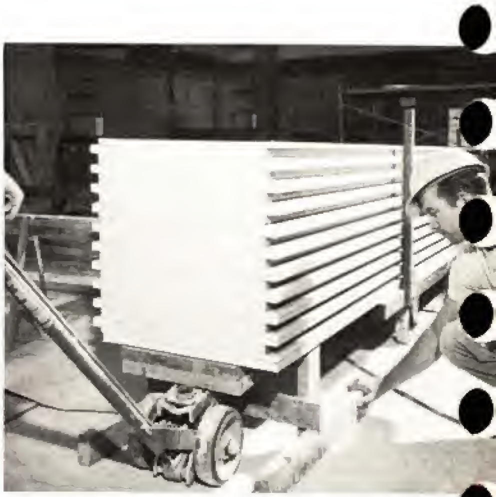
*Reg. T. M. U. S. Pat. Off.

INSTALLATION


Panels are laminated on job site


Completed panels being taken to point of use

Panels in place ready for erection

Panels are set in position

Custom electrical installations as required

Doors cut where required

"V" Joints receive special treatment

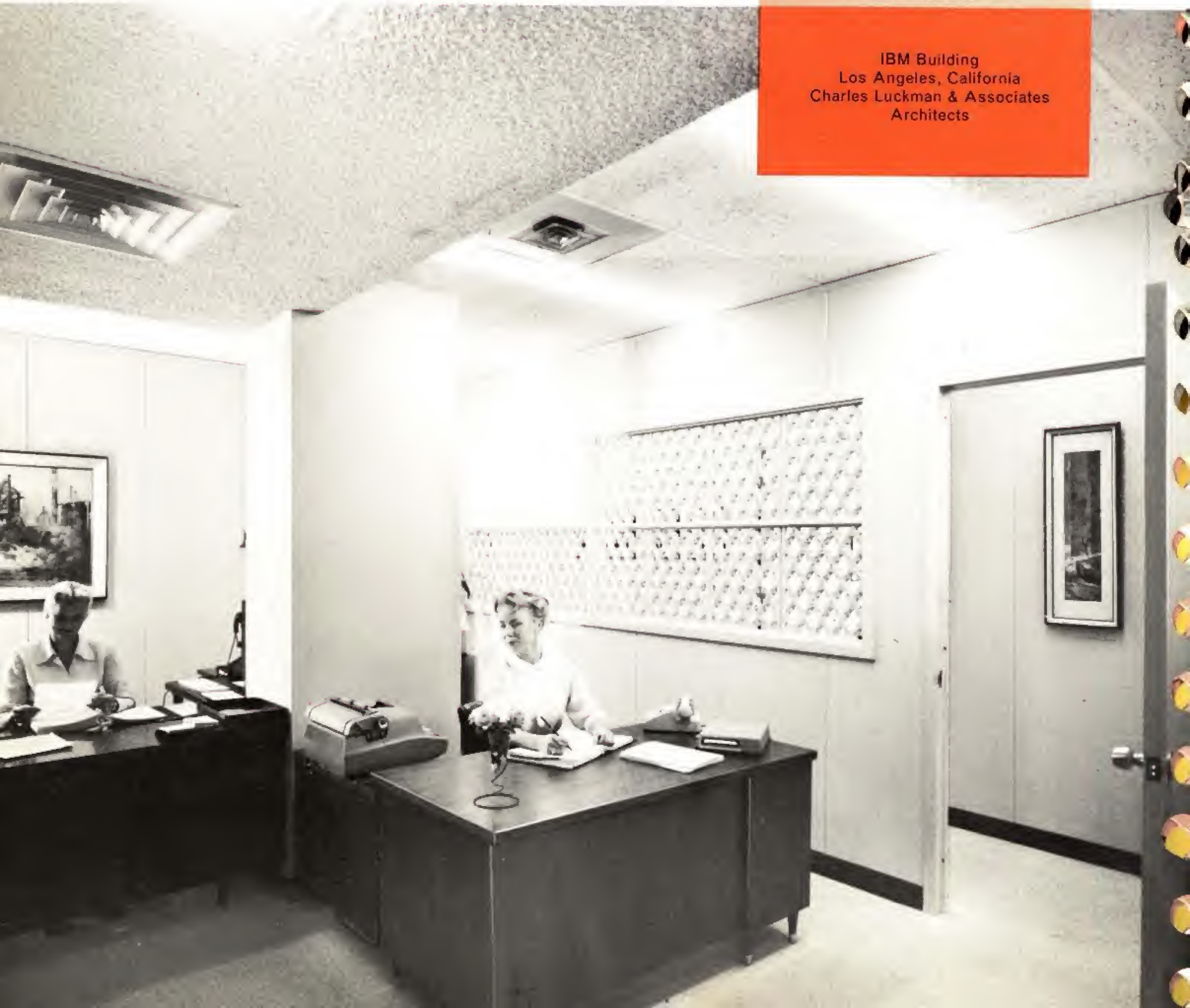
Panels neatly fitted around pipes and ducts

Selected as an integral part of these designs

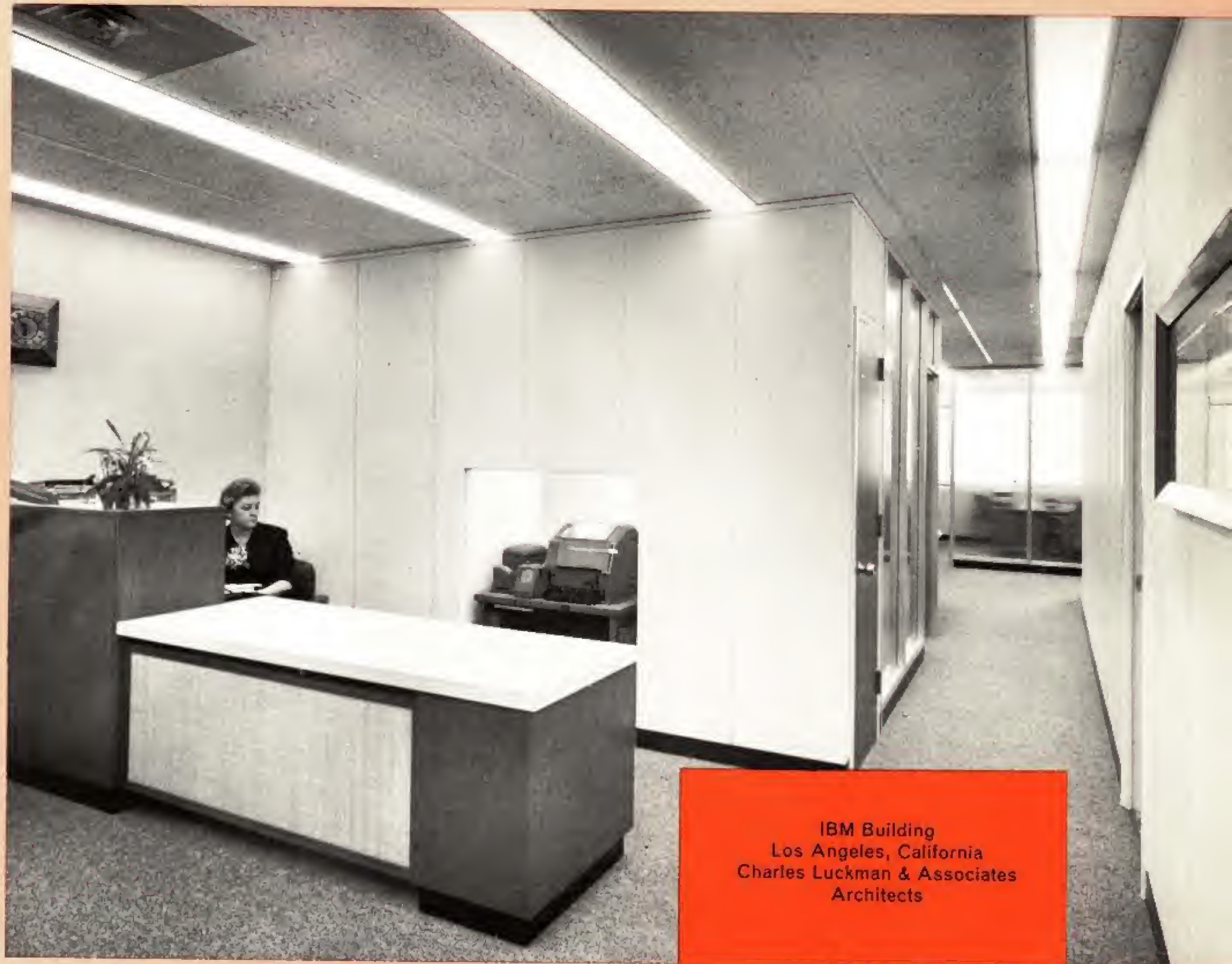
Petroleum Building
Los Angeles, California
Collier Carbon &
Chemical (offices)
J. Richard Shelley, Architect

Movable VAUGHAN WALLS

IBM Building
Los Angeles, California
Charles Luckman & Associates
Architects



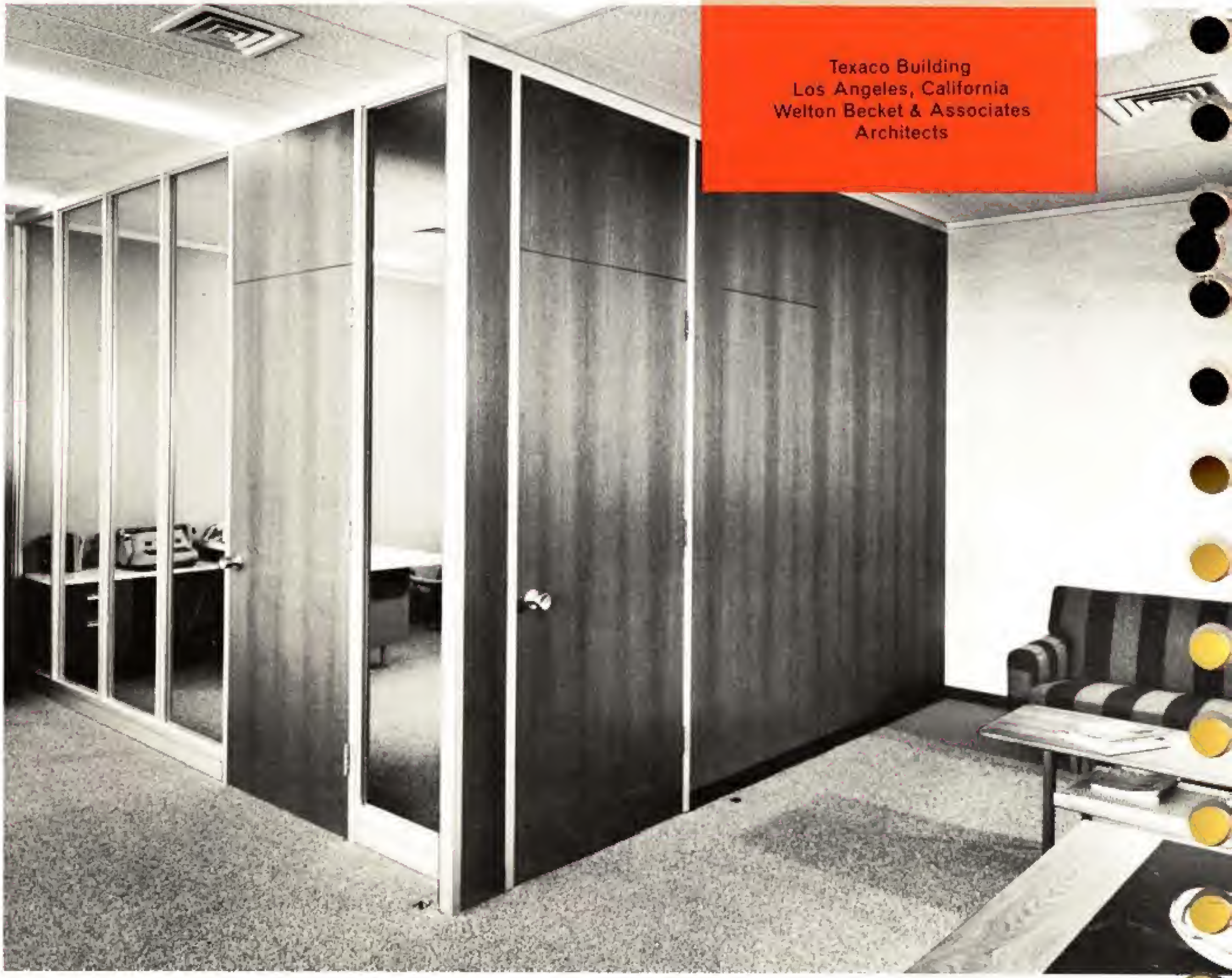
Movable VAUGHAN WALLS



IBM Building
Los Angeles, California
Charles Luckman & Associates
Architects

Movable VAUGHAN WALLS

Texaco Building
Los Angeles, California
Welton Becket & Associates
Architects



Selected by these architects and many others

VAUGHAN WALL installations

ARCHITECT	JOB	CITY
Allison & Rible	Cal. Int. Telephone Co.	Bishop, Cal.
Allison & Rible	Rand Corporation	Santa Monica, Cal.
Allison & Rible	U. C. Administration Bldg.	Riverside, Cal.
Anderson, Beckwith & Haible	Travelers Insurance Bldg.	Boston, Mass.
Claude Beelman	Continental Co. Bldg.	Los Angeles, Cal.
Welton Becket & Assoc.	Texas Co. Bldg.	Los Angeles, Cal.
Welton Becket & Assoc.	Security First Nat'l. Bank	Los Angeles, Cal.
Bennett & Bennett	1st Western Bank & Trust	Garden Grove, Cal.
Candreva & Jarrett	Rancho San Vicente Bldg.	W. Los Angeles, Cal.
Chatelain, Gauger & Nolan	IBM Building	Bethesda, Md.
L. W. Davidson	Turco Products, Inc.	Los Angeles, Cal.
A. Epstein & Sons	Square D	Chicago, Ill.
Furniture Mart	Furniture Mart	Chicago, Ill.
Hugh Gibbs	Vandenberg Air Force Base	Lompoc, Cal.
H. L. Gogerty	Palmdale High School	Palmdale, Cal.
H. L. Gogerty	Antelope Valley Joint Union High School	Antelope Valley, Cal.
Edwin B. Goodell, Jr.	Rockland Atlas National Bank of Boston	Boston, Mass.
Edwin B. Goodell, Jr.	Keystone Custodian Funds	Boston, Mass.
Granberry Jackson, Jr.	Southern Bell Headquarters Bldg.	Nashville, Tenn.
Holmes & Narver Env.	Stimulation Bldg. (Navy)	Point Mugu, Cal.
Hovind Hawthorne & Smith	Bothell Elementary School	Bothell, Wash.
Kistner Wright & Wright	Remington Rand	Los Angeles, Cal.

ARCHITECT	JOB	CITY
Ernest Lee	Ft. Huachuca	Tuscon, Arizona
Chas. Luckman & Assoc.	IBM Bldg.	Los Angeles, Cal.
Pereira & Luckman	CBS Building	Los Angeles, Cal.
Pereira & Luckman	Gibralter Savings & Loan	Beverly Hills, Cal.
Luckman & Assoc.	Luckman & Assoc. Office	Los Angeles, Cal.
A. C. Martin	Ramo Wooldridge Corp. (6 Bldgs.)	Hawthorne, Cal.
A. C. Martin	A. C. Martin & Assoc. Bldg.	Los Angeles, Cal.
A. C. Martin	Thompson Ramo Wooldridge (4 Bldgs.)	Canoga Park, Cal.
A. C. Martin	Space Technology Laboratories	El Segundo, Cal.
A. C. Martin	Barker Brothers	Los Angeles, Cal.
A. C. Martin	A. C. Martin	San Diego, Cal.
John L. Moore Co.	Daystrom Systems	La Jolla, Cal.
Chas. Polacek	Central Plaza Bldg.	Phoenix, Arizona
Richard Shelley	Collier Carbon & Chemical	Los Angeles, Cal.
Smith, Powell & Morgridge	Smith, Powell & Morgridge	Los Angeles, Cal.
Douglas Stone	First Western Bldg.	San Francisco, Cal.
Douglas Stone	First Western Bldg.	Oakland, Cal.
Douglas Stone	Peninsula Hospital	Burlingame, Cal.
Henry Sylvestri	Orbach Bldg.	Los Angeles, Cal.
Thormin Haynes & Assoc.	Huntington Memorial Hospital	Pasadena, Cal.
Thorman & Baynes	Young Electric Bldg.	Los Angeles, Cal.
Scott & Beecher	Empire Bldg.	Salt Lake, Utah
Slack W. Winburn	Surety Life Insurance Co.	Salt Lake City, Utah

INSTALLED BY TRAINED SPECIALISTS

Every Authorized Erector of Movable VAUGHAN WALLS is a specialist — carefully selected and trained as an Authorized Erector of Movable VAUGHAN WALLS by Vaughan Interior Walls, Inc.

Movable VAUGHAN WALLS

VAUGHAN
*
WALLS

UNITED STATES GYPSUM

the greatest name in building

UNITED
STATES
GYPSUM

*TRADEMARK OF VAUGHAN INTERIOR WALLS, INC.

WB-351 USG 2-60 Printed in U.S

A.I.A. File No. 25B

TECHNICAL INFORMATION

TEXOLITE*

PAINT PRODUCTS

UNITED STATES GYPSUM

1960

*T.M. Reg. U.S. Pat. Off.

A.I.A File No. 25B

TEXOLITE*
PAINT PRODUCTS

Beauty, durability and economy are featured in the various paint products manufactured for the building industry by United States Gypsum Company.

Within U.S. Gypsum, function of a product is always in terms of the customer's needs and the building industry's demands. For the architect, function is interpreted in terms of appropriateness to building design, both in structure and esthetics. Function for the builder, means ease of handling and application within accepted building techniques and with available or easily procured equipment. For the property owner, product function must mean a better home, office, factory or warehouse over a greater period of time with a minimum of maintenance commensurate with personal comfort.

AVAILABILITY

Multi-plant manufacturing facilities permit U.S.G. to provide maximum service on paint products throughout the country. Paint producing mills are located on the east coast, the west coast and in the central United States. These strategic locations provide maximum service not only to the major markets but all sections of the country. In addition our paints are available from distributors and various warehouses throughout United States.

USG* Paints pay for themselves in terms of reduced costs in building maintenance and increased personal comfort. But through research, engineering product development, and market knowledge based on more than thirty years of experience gained in serving the building industry, U.S.G. has developed plus values in its paint products to give greater meaning to *function* for the architect and contractor, as well as the property owner.

Typical of these plus values are these U.S.G. developments—TEXOLITE* GRAND PRIZE*, a flat ready to use wall paint, available in white and colors or can be tinted easily with TEXOLITE Tube Colorants by your painting contractor as you desire; TEXOLITE Primer-Sealer, is an easily applied primer-sealer that locks in lime or alkali and provides a good tooth for finish paints; TEXOLITE Block Filler, a filler product for interior or exterior use has been prepared to fill pores and voids in wall and ceiling surfaces, as well as cement surfaces.

TECHNICAL ASSISTANCE

Keeping pace with the development of product, U.S.G. has maintained and expanded its services to the building industry. Offices in all major cities, staffed with trained paint personnel are prepared to provide information and assistance without obligation. Supplementing these representatives, the U.S.G. Architect Service Department is available to assist the architect and engineer.

*T.M. Reg. U.S. Pat. Off.

RECOMMENDED USE

INTERIOR

Plaster Walls & Ceilings	Gypsum Wallboard Walls & Ceilings	Wood Except Floors	Metal	Perforated Acoustical Tiles	Plaster, Fissured & Textured Acoustical Tile	Composition Wallboards & Hardboard	Porous Masonry Walls & Ceilings	Above & Below Grade Masonry
Surface Preparations and Joint Treatment Products								
X	X							
X	X					X	X	
X	X					X	X	
							X	
							X	
							X	X
	X							
	X							
	X							
	X							
X							X	
X*	X	X					X	
X	X	X	X					
Finishes								
X	X			X		X	X	
X	X			X		X	X	
X	X			X	X	X	X	
X	X			X		X	X	
							X	
							X	X
							X	X
X	X	X	X			X	X	
X	X			X		X	X	
X	X							
X	X							
X	X					X	X	
X	X					X		
X	X						X	

*Also Canvas

"USG", "TEXOLITE", "DURAVAL", "GRAND PRIZE", "TEXTONE", "CEMENTICO", "A-B TEX", "DUR-A-DRI", "DURA-STOP", "SHEETROCK", "RED TOP", "PERF-A-TAPE", are trademarks owned and/or registered by United States Gypsum and are used by it to distinguish the particular paints and painters' supply products manufactured only by United States Gypsum Company.

USG* PRODUCTS

Surface Preparations and Joint Treatment Products

EXTERIOR					
Porous Masonry Walls & Soffits	Above Grade Masonry	Wood & Asbestos Shakes & Shingles	USG* PRODUCTS	Characteristics	See Page
			SHEETROCK* Sealer	For use under enamels and other interior spirit thinned paints.	5
			TEXOLITE Primer-Sealer	Quick-drying, "locks in" lime or alkali.	5
			TEXOLITE Vinyl Sealer	Pigmented, quick-drying white primer-sealer.	5
X	X		TEXOLITE Penetrating Sealer	Specially formulated for porous or chalky surfaces.	5
X	X		TEXOLITE Block Filler	Conceals voids, fills pores & will correct or improve surface blemishes.	5
X	X		TEXOLITE DURA-STOP*	Forms durable, water-tight fill; resists hydrostatic pressure.	5
			PERF-A-TAPE* Joint System	Reinforces, conceals gypsum wallboard joints, nailheads.	6
			PERF-A-TAPE Cement and Topping	" " " " " "	6
			All Purpose Ready-mixed PERF-A-TAPE Cement	" " " " " "	6
			PERF-A-TAPE Knives and Corner Tools	" " " " " "	
			RED TOP* Patching Plaster	For easy, permanent, low-cost patching or repair.	6
			TEXOLITE Spackling Putty	General purpose fine filling, patching, building up.	6
			TEXOLITE Paste Spackling Putty	All-purpose putty for patching, leveling most interior surfaces.	6

Finishes

Porous Masonry Walls & Soffits	Above Grade Masonry	Wood & Asbestos Shakes & Shingles	USG* PRODUCTS	Types	Characteristics	See Page
			TEXOLITE Alkyd Latex	flat	Quick drying, recoatable, no painty odor.	6
			TEXOLITE* GRAND PRIZE*	flat	Polyvinyl acetate, quick drying, washable, excellent covering.	7
			TEXOLITE Standard	flat	Cleanable water-thinned casein for interiors.	7
			TEXOLITE* DURAVAL*	velvet	Easily applied, scrubbable, rubber base for interiors.	7
X		X	TEXOLITE Vinyl Exterior	flat	Good weathering, non-penetrating emulsified polyvinyl base.	6
X	X		TEXOLITE DURA-DRI*	flat	Heavy bodied water protective coating.	7
X	X		TEXOLITE CEMENTICO*	flat	Water repellent hydraulic cement base.	7
			TEXOLITE Semi-Gloss Enamel	semi-gloss	Spirit-thinned, odorless alkyd base enamel.	7
			NEO FLECK* multi-color enamel	flat	Tough, thick filmed multicolored interior enamel.	7
			TEXOLITE Texture	sanded	Odorless, one-coat, rubberized.	8
			TEXOLITE Ripple	stipple	Latex base, ready to use interior finish.	8
			TEXTONE*	textured	Plastic texturing, blemish concealing, for interiors.	8
			USG* Texture Paint	textured	Economical plastic texturing paint.	8
			A-B TEX*	textured	Economical paint for light-medium textures, concrete ceilings.	8

ARCHITECTURAL SPECIFICATIONS 4

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*T.M. Reg. U.S. Pat. Off.

SPECIFICATIONS

I. GENERAL CONDITIONS

The painting contractor shall read and be governed by the general conditions at the head of the complete specifications for this project.

II. MATERIALS

1. Deliver in original unopened containers.
2. Store to protect from damage by elements and tampering.
3. Use all materials in strict accordance with manufacturer's directions.

III. MASTER SPECIFICATIONS

A. INTERIOR WORK

All surfaces must be dry, sound, clean, free of dust, grease or oil.

1. **PLASTER**—Fill all nicks, cracks, gouges, and other surface imperfections with Texolite Paste or Powder Spackling Putty. Use Red Top Patching Plaster to repair large holes and cracks in plaster. Large cracks may be reinforced with Perf-A-Tape Joint System. Repaired surfaces shall be sanded smooth and dust removed, or textured to match adjoining surface.

NEW PLASTER*—including any patches and repairs, must age 60 days.*

Flat Finish—*Poly Vinyl Acetate, Alkyd-Latex, or Casein Paints*

(a) Pastels—2 coats of Texolite Grand Prize or Texolite Alkyd Latex Paint or 1 coat Texolite Primer or Texolite Primer Sealer tinted to approximate shade of finish coat and 1 or 2 coats Texolite Grand Prize or 1 or 2 coats Texolite Alkyd Latex or 1 or 2 coats Texolite Standard or 1 or 2 coats flat oil paint.

(b) Deep Tones—1 or 2 coats Texolite Primer Sealer tinted to approximate shade of finish coat and 1 or 2 coats Texolite Grand Prize or 1 or 2 coats of Texolite Alkyd Latex Paint.

Velvet Finish—*Rubber Emulsion Base Paints*—1 coat of Texolite Primer or Texolite Primer Sealer tinted to the approximate shade of the finish coat. 1 or 2 coats of Texolite Duraval.

Semi-Gloss Finish—1 coat of Texolite Primer Sealer and 1 or 2 coats of Texolite Semi-Gloss Enamel.

Multi-Color Finish—1 double spray application of Neo Fleck Enamel.

OLD PLASTER PREVIOUSLY PAINTED*—Remove all loose or scaling paint and repair as outlined under the Plaster section.*

Flat Finish

(a) Pastels—1 or 2 coats of Texolite Grand Prize or 1 or 2 coats of Texolite Alkyd Latex Paint or 1 or 2 coats of Texolite Standard Paint.

(b) Deep Tones—1 or 2 coats of Texolite Grand Prize semi-color or 1 or 2 coats of Texolite Primer Sealer tinted to the approximate shade of finish coat and 1 or 2 coats of flat oil paint.

Velvet Finish—*Rubber Emulsion Base Paints*—1 or 2 coats of Texolite Duraval.

SEMI-GLOSS FINISH—1 or 2 coats of Texolite Semi-Gloss Enamel.

MULTI-COLOR FINISH—1 double spray application of Neo Fleck Enamel.

2. **GYPSUM WALLBOARD**—Prepare joints and nailheads with Perf-A-Tape Joint System in accordance with manufacturer's directions.

Flat Finish—1 or 2 coats of Texolite Grand Prize or 1 or 2 coats of Texolite Alkyd Latex or 1 coat Texolite Primer or Sheetrock Sealer or Texolite Primer-Sealer tinted to approximate shade of finish coat and 1 coat Texolite Standard or flat oil paint.

Velvet Finish—*Rubber Emulsion Base Paint*—1 or 2 coats of Texolite Duraval or 1 coat Texolite Primer or Sheetrock Sealer or Texolite Primer-Sealer tinted to approximate shade of finish coat and 1 or 2 coats Texolite Duraval paint.

Multi-Color Finish—1 double spray application of Neo Fleck Enamel.

Semi-Gloss Finish—1 coat of Sheetrock Sealer or Texolite Vinyl Sealer tinted to approximate shade of finish coat and 1 or 2 coats of Texolite Semi-Gloss Enamel.

High Gloss Finish—1 coat Sheetrock Sealer or Texolite Vinyl Sealer and 1 coat enamel undercoater (tinted to approximate shade of finish coat) and 1 or 2 coats of Gloss Enamel.

Textured Finish—1 coat Textone of consistency to provide desired texture or 1 coat USG Texture Paint of consistency to provide desired texture and 1 or 2 coats Duraval or Texolite Grand Prize or Texolite Alkyd Latex or 1 or 2 coats of Texolite Standard.

Sand Finish Texture—1 coat of Texolite Texture.

Stipple Finish—1 coat of Texolite Ripple or 1 coat Sheetrock Sealer or Texolite Vinyl Sealer tinted to approximate shade of finish coat and 1 coat of oil stipple paint.

Wallpaper or Wall Fabric Coverings—1 coat Sheetrock Sealer. Apply wallpaper or wall covering in accordance with the manufacturer's directions. A size over Sheetrock* Sealer is recommended.

3. **WOOD SURFACE (except floors)**—New wood (not previously painted); sand smooth, touch up knots, sap streaks, pitch spots with shellac. 1 coat pigmented oil primer sealer and 1 or 2 coats Texolite Grand Prize for flat finish or 1 or 2 coats Texolite Duraval for velvet finish or 1 or 2 coats Texolite Semi-Gloss Enamel for semi-gloss finish.

4. **METAL**—Remove grease, oil and plaster spatterings. 1 coat of rust inhibitive primer and 1 or 2 coats Texolite Grand Prize or 1 or 2 coats Texolite Duraval or 1 or 2 coats Texolite Semi-Gloss Enamel.

5. **ACOUSTICAL TILES (perforated and heavily fissured)**—1 or 2 coats Texolite Standard, Grand Prize, Duraval, or Texolite Alkyd Latex.

6. **ACOUSTICAL PLASTER AND LIGHTLY FISSURED TILE** (refer to painting instructions of plaster or tile manufacturer). 1 coat of Texolite Standard reduced in the proportion of 1 gallon paste paint to 1 gallon of water and 1 coat of Texolite Standard reduced in the proportion of 1 gallon paste paint to 2 gallons of water.

7. **INSULATION BOARD (hardboard and other composition wall boards).**— 1 or 2 coats Texolite Standard, Texolite Grand Prize, or Texolite Duraval, or Texolite Alkyd Latex.

8. **MASONRY**—Surfaces such as concrete block, brick, stucco, monolithic concrete and unglazed tile. All surfaces must be dry, sound, clean, free of dust, grease, oil, efflorescence and chalkiness. For light or moderately chalky surfaces 1 coat Texolite Penetrating Sealer will penetrate the chalk and bind it to original surface to form a tight base for repainting. A coat of Texolite Block Filler will conceal voids, pores, correct or improve surface blemishes and provide a uniform sanded surface for painting. Texolite Penetrating Sealer and Texolite Block Filler can be used under any paint except cement base paints. Atmospheric and structural temperatures must be above 50°F during application and for 48 hours afterward.

Multi-Color Finish—1 double spray application of Neo Fleck Enamel.

Washable Velvet Finish—1 coat Texolite Primer or Texolite Primer-Sealer tinted to approximate shade of finish coat and 1 or 2 coats Texolite Duraval.

Flat Finish—1 coat Texolite Primer or Texolite Primer-Sealer tinted to approximate shade of finish coat and 1 or 2 coats Texolite Grand Prize or 1 or 2 coats Texolite Standard or Texolite Alkyd Latex or 1 or 2 coats Texolite Vinyl Exterior Paint.

Uniform Sanded Finish—1 coat Texolite Block Filler and 1 or 2 coats Texolite Vinyl Exterior or Texolite Duraval or Texolite Grand Prize. 1 or 2 coats Texolite Alkyd Latex or Texolite Standard or 1 double spray application of Neo Fleck Enamel.

Control Water Penetration—Use Dura-Stop to stop the flow of water through cracks or holes, then apply Dura-Dri to the dampened porous masonry surface. Keep surface moist for about 12 hours for complete curing of the Dura-Dri.

Portland Cement Base Finish—2 coats Cementico.

B. EXTERIOR WORK—Masonry Surfaces

All surfaces must be porous, free from oil, grease, efflorescence, chalkiness. Patch cracks or openings with Dura-Dri, Dura-Stop or 1 part Texolite Cementico mixed with 2 parts clean sharp sand. Texture to duplicate original surface. Remove any rust stains.

1. **PORTLAND CEMENT BASE PAINT FINISH**—For application to unpainted, porous masonry surfaces such as brick, concrete masonry units, unglazed tile, stucco, etc., or similar weathered surfaces which have been painted only with portland cement base paints. Surface must be wet down immediately prior to painting until it no longer absorbs water. Stir paint frequently to prevent settling. Do not apply in direct sunlight. Atmospheric and structural temperatures must be above 50°F during application and for 48 hours afterwards. Do not paint during rainy spell. Allow 24 hours' drying time between coats. Use 2 coats Cementico or 1 coat Dura-Dri for control against water penetration and 1 coat Cementico for decoration or 1 coat Cementico or 1 coat Dura-Dri and 1 or 2 coats Texolite Vinyl Exterior Paint.
(Note—When application is over cement or lightweight aggregate block and maximum protection against water penetration is not a prime factor, use following mix for first coat—2 lbs. clean sharp sand mixed with 5 lbs. Cementico.)

2. **VINYL EXTERIOR PAINT FINISH**—For application to painted or unpainted masonry surfaces such as stucco, new or old masonry and cement surfaces and unglazed weathered asbestos cement siding and new or previously painted wood shakes or shingles. Surfaces must be clean, free of grease, oil, form oils, dirt and other foreign matter before painting. Moderately chalky surfaces should be given a coat of Texolite Penetrating Sealer which will bind the chalk to the original surface, forming a tight base for repainting. A coat of Texolite Block Filler will conceal voids, pores, correct or improve surface blemishes and provide a uniform sanded surface for painting. Stucco and poured concrete must be at least 60 days old before painting. Atmospheric and structural temperatures must be above 50 degrees F. during application and for 48 hours afterwards. There shall have been no rain for 12 hours preceding application and none shall be forecast for 24 hours after application. Allow overnight drying between coats. Two coats give best results. 1 coat Texolite Penetrating Sealer if surface is moderately chalky. 1 coat Texolite Block Filler if Filler is required to provide uniform surface. 1 or 2 coats Texolite Vinyl Exterior.
(Note—Surfaces which are extremely chalky should be cleaned by sandblasting.)

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*T.M. Reg. U.S. Pat. Off.

PRODUCT DESCRIPTION

SURFACE PREPARATIONS

SHEETROCK* SEALER

A tung oil emulsion sealer designed specifically for application over gypsum wallboard.

FORM
Ready to use.

CHARACTERISTICS
Ready to use. Ease of application. May be tinted with Duraval.

PRIMING
Not required.

USES & LIMITATIONS
For use over gypsum wallboard to seal Perf-a-Tape Joints, lay the nap of the paper, and prepare the surface to receive oil stipples, enamels, flat oil paints, water thinned paints and latex paints, and/as a size under wallpaper.

TEXOLITE PRIMER-SEALER

A pigmented, easily applied, quick drying primer-sealer which "locks in" lime or alkali, equalizes "suction", provides "tooth". For use on all interior wall and ceiling surfaces under paint thinned with turpentine, mineral spirits or water.

FORM
Ready to use.

CHARACTERISTICS
Thoroughly seals, dries to uniform sheen, lime locking eliminates suction problems, bridges hairline cracks, lays fiber nap in gypsum or insulating types of wallboard. When drying conditions are good, may be recoated with oil, alkyd oleoresinous paints and enamels in two hours or more. Water thinned paints may be applied when sealer has dried overnight or longer, depending on drying conditions.

PRIMING
Not required.

USES & LIMITATIONS
Use on all dry, sound, clean, paintable, new or old, painted or unpainted interior surfaces. Prime metal surfaces with rust inhibitive primer. May be tinted with Texolite Tube Colorants. Apply with brush, roller or spray. Not for use on floors.

TEXOLITE VINYL SEALER—P.V.A.

A pigmented, easily applied, quick drying white primer-sealer, for use on all interior surfaces under paints thinned with turpentine, mineral spirits or water.

FORM
Ready to use.

CHARACTERISTICS
Thoroughly seals usual interior surfaces—dries to uniform sheen—alkali resistant—helps bridge hairline cracks—does not raise fibers in gypsum or insulating types of wallboard. When drying conditions are good, alkyd oleoresinous paints and enamels (flat, semi-gloss or full gloss), may be applied in two hours or more. Latex and other water thinned paints may be applied when sealer has dried 24 hours or longer under good drying conditions.

PRIMING
Not required.

USES & LIMITATIONS
For use on sound—dry—clean interior surfaces. Plaster and masonry surfaces must age 60 days or more. Patches and joint cement applications must be thoroughly dry before sealing. Prime metal surfaces with rust inhibitive primer. May be tinted with Texolite Tube Colorants. Apply with brush—roller or spray. Not for use on floors.

TEXOLITE PENETRATING SEALER

A special sealer formulated to penetrate and condition exterior and interior wall and ceiling surfaces which are porous and/or moderately chalky.

FORM
Ready to use.

CHARACTERISTICS
Will penetrate the chalk remaining from cement, resin emulsion or oil type paints on otherwise firm surfaces. Binds the chalk to the original surface, forming a tight base for repainting. May be recoated with any type paint, except bonding cement paints.

PRIMING
Not required.

USES & LIMITATIONS
Use on porous surfaces which are free from heavy chalk, grease, oil, wax, and other foreign materials. Surface must be cleared of peeling, flaking and crumbling conditions and must be thoroughly dry. May be tinted with colors in oil. Other colorants not recommended. Allow sealer to dry at least four days before covering with finish coatsof paint.

TEXOLITE BLOCK FILLER

An all purpose, ready to use filler for concealing voids, filling pores and presenting a uniform sand effect over all interior and exterior masonry surfaces, or other rough wall and ceiling surfaces.

FORM
Ready to use.

CHARACTERISTICS
Conceals voids, fills pores, corrects or improves surface blemishes, provides a uniform sand effect. On block walls, reduces sound transmission from one room to another. Average sound transmission loss of .42 when material is applied to both sides of 4 inch Waylite Block wall. May be coated with any type paint, except bonding cement paints. On exterior, coat with Texolite Vinyl Exterior Paint or other good grade exterior paint.

PRIMING
On surfaces which are porous and moderately chalky first apply coat of Texolite Penetrating Sealer. On other surfaces which are clean, sound, and free of foreign materials, no priming is necessary.

USES & LIMITATIONS
Provides uniform finish over normally rough surfaces. Rejuvenates old masonry walls. Use on interior or exterior, painted or unpainted, dry, sound, clean, paintable, masonry surfaces. May be tinted with Texolite Vinyl Exterior Paint, if maximum filling properties are not required. Apply when atmospheric and structural temperatures are above 50°F. Not intended to be a water-proofing material.

DURA-STOP*

Is a dry powder hydraulic compound, requires only water for mixing. Stops water under pressure from coming through cracks, breaks or holes in porous masonry.

FORM
Powder.

CHARACTERISTICS
Sets in 3 to 5 minutes and stops water under pressure from coming through cracks, breaks and holes in porous masonry. It must be held in place until set. Becomes harder and more water resistant in the presence of water.

PRIMING
Masonry surface should be dampened thoroughly prior to application.

USES & LIMITATIONS
For filling cracks and holes in masonry prior to the application of Dura-dri. Dura-stop will stop the flow of water even when the water is under pressure. Dura-stop sets in 3 to 5 minutes, may also be used to anchor washing machines, motors and other fixtures to concrete floors and walls. Do not use on non-porous masonry or non-masonry surfaces.

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*T.M. Reg. U.S. Pat. Off.

SURFACE PREPARATIONS cont.

PERF-A-TAPE JOINT SYSTEM

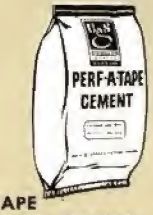
System consists of Joint cement and a strong spark perforated fiber tape in one package. Is designed to reinforce and conceal gypsum wallboard joints and nail heads. Is excellent for repairing cracks on plaster surfaces.

FORM
Power (cement) and reinforcement tape.

CHARACTERISTICS
Ample working time, excellent bond, easy mixing, minimum shrinkage, smooth working, easy sanding, no alkali burning of paint. Product designed for use in hand taping or for application with special taping tools.

PRIMING
None.

USES & LIMITATIONS
Used in both new and old construction for concealing and reinforcing joints and nail heads in gypsum wallboard or for reinforcing cracks, interior and exterior angles in most types of interior wall and ceiling surfaces. Not for exterior use.



PERF-A-TAPE CEMENT AND TOPPING

Principally for dry wall contractors. Perf-A-Tape Cement for embedding tape—Topping for second and third coat work and spotting nailheads.

FORM
Powder.

CHARACTERISTICS
Perf-A-Tape Cement provides outstanding bond. Strength—perfect for reinforcing joints in dry wall construction. Topping Cement for superior smoothness, easier sanding. Low shrinkage, easy mixing; can be held in wet mix for several days. Can be used with hand or machine tools.

PRIMING
None required—both can be coated with most standard priming materials.

USES & LIMITATIONS
For best results use with Perf-A-Tape tape. Used in both new and old construction for concealing and reinforcing joints and nail heads in gypsum wallboard or for reinforcing cracks, interior and exterior angles in most types of interior wall and ceiling surfaces.

TEXOLITE PRIMER

A priming material which "locks in" lime or alkali and makes possible more durable paint jobs. Equalizes "suction." Provides "tooth" to which paint clings tightly.

FORM
Powder.

CHARACTERISTICS
Assures longer life for decorative materials. Produces a hard, lime locking prime coat over which may be applied rubber-emulsion paints, water-thinned paints, oil paints, enamels.

PRIMING
Not required.

USES & LIMITATIONS
For priming new plaster, old painted walls, interior concrete surfaces, unpainted dry concrete floors, gypsum and insulation wallboard.

FLAT FINISHES

TEXOLITE STANDARD (casein flat paint)—

White and tints—cleanable water thinned paint for interior walls and ceilings providing brighter, colorful, beautiful long-lived inexpensive decoration.

FORM
Paste.

CHARACTERISTICS
Dries in one hour. No prime or size coat required for most paint jobs. Use large brush for fast application. No objectionable painty odor. No fire hazard during application. Recoatable. Cuts painting time and costs.

PRIMING
Prime new wood and unpainted metal, including exposed nailheads. All other surfaces require only one or two coats of Texolite Standard.

USES & LIMITATIONS
Over old and new interior walls and ceilings in homes, hotels, apartments, offices, stores, shops, schools, hospitals, factories and warehouses. Not recommended for use over wood trim subject to wear, or under damp conditions, or where it will be subjected to excessive abrasion.

RED TOP PATCHING PLASTER

For easy and permanent patching or repairs on interior plaster walls and ceilings and interior concrete surfaces, at a very nominal cost.

FORM
Powder.

CHARACTERISTICS
Is non-shrinking, contains no lime, has ample working life of about 30 minutes and dries to a hard, dense uniform finish. Add only water in mixing. May be covered with any decorative material.

PRIMING
Takes any standard priming material.

USES & LIMITATIONS
For patching cracks and larger surface imperfections on interior plaster and concrete surfaces. Not recommended for concrete floors. Excellent for preparing old, defaced plaster surfaces for any type of interior decoration.

TEXOLITE SPACKLING PUTTY

Used to prepare surfaces before painting or decorating to build up or fill imperfections to provide a smooth even surface.

FORM
Powder.

CHARACTERISTICS
Exceptionally fine grind—grit free—adaptable to knife or brush application. Can be sanded. Adheres to any properly cleaned solid surface. Hardens in a few hours, forming a tough, durable surface.

PRIMING
Not required.

USES & LIMITATIONS
Used to fill small cracks, scars, slight imperfections in plaster, nicks, cracks, knotholes or nail holes in wood trim, nail holes in wallboards. To fill voids or imperfections in concrete, cracks in tile or mosaic, household repairs on furniture, toys, moulding, etc. For treating canvas and wall fabric. For interior use only.

TEXOLITE PASTE SPACKLING PUTTY

An economical, all-purpose putty—ready to use—for patching or leveling small cracks, knicks, scars in most interior surfaces. Especially fine for hair-line cracks in wood or plaster and smoothing up dry-wall work.

FORM
Ready to use.

CHARACTERISTICS
No waste in mixing—use as required direct from can. Dries to a smooth, hard finish which sands easily but will not crumble, shrink or crack.

PRIMING
Takes any standard priming material.

USES & LIMITATIONS
For fine patching in wood, plaster, drywall and interior concrete surfaces. Use putty knife, broad knife, brush or caulking gun. The solution to small surface imperfections and for repairing furniture, toys, wall fabrics, mosaic, knotholes, etc.

INTERIOR OR EXTERIOR

TEXOLITE VINYL EXTERIOR (poly vinyl acetate)

White and colors, fine quality, non-penetrating paint, good hiding, weathering qualities and true color.

FORM
Ready to use.

CHARACTERISTICS
Quick drying, easy to apply with brush, spray or roller. Highly weather resistant, yet permits unwanted moisture in walls to escape. Apply over dry or slightly damp (not wet) surfaces.

PRIMING
On porous and moderately chalky surfaces, first apply coat of Texolite Penetrating Sealer. On clean, sound, surfaces, free of foreign material, no priming is required.

USES & LIMITATIONS
Use on painted or unpainted masonry surfaces free of flaking, crumbling, or chalking conditions. Use on all types of interior surfaces, exterior wood shakes and shingles. Two coats are best. Intermix colors for many other tints and shades. Not for use over magnesite stucco, glazed brick or tile, polished stone, or unsealed, loose, scaly, greasy, chalking, powdery or otherwise unsound surfaces, nor as a floor paint.

TEXOLITE
PAINT PRODUCTS

TEXOLITE GRAND PRIZE*
(poly vinyl acetate)

Flat wall paint. Available in white and tints. Provides durable, washable, flat, smooth finish.

FORM
Ready to use.

CHARACTERISTICS
Easily applied. Will dry to the touch in one hour. No objectionable painty odor. Excellent leveling. Unaffected by alkalinity in plaster and concrete. One coat covers well. Can be second-coated same day under good drying conditions.

PRIMING
New wood and unpainted metal, including exposed nailheads, should be primed. All other surfaces usually require only one or two coats of GRAND PRIZE Paint.

USES & LIMITATIONS
Over old and new interior walls and ceilings in homes, apartments, offices, stores, schools, hospitals, factories, warehouses. Over painted and unpainted plaster, wallboard and concrete. Wide variety of colors available by intermixing colors and by tinting with TEXOLITE Tube Colorants. Not recommended for use on floors or under highly humid conditions.

TEXOLITE ALKYD LATEX

White and tints—provides washable film combining the easy, quick application of latex paints with the flatness of alkyd paints.

FORM
Ready to use.

CHARACTERISTICS
Quick drying and reasonable in cost—flat finish—no painty odor—recoatable.

PRIMING
Prime new wood and unpainted metal, including exposed nailheads. All other surfaces require only one or two coats of TEXOLITE Alkyd Latex.

USES & LIMITATIONS
Over old and new, painted and unpainted, interior walls and ceilings in homes, apartments, offices, stores, schools, hospitals, factories and warehouses and on residential development projects. Wide variety of colors by intermixing standard tints or tinting with TEXOLITE Tube Colorants.

VELVET FINISH

TEXOLITE DURAVAL*
(LATEX BASE)

Emulsion wall paint. Available in white and tints. Provides durable scrubbable velvet finish.

FORM
Ready to use.

CHARACTERISTICS
Will dry to the touch in one hour. No objectionable painty odor. Rubberized Copolymer binder provides excellent adhesion and durability. Recoatable.

PRIMING
New wood and unpainted metal, including exposed nailheads, should be specially primed. All other surfaces usually require only one or two coats of DURAVAL paint.

USES & LIMITATIONS
Over old and new interior walls and ceilings in homes, apartments, offices, stores, schools, hospitals, factories and warehouses. Over painted and unpainted plaster, wallboard and concrete. Wide variety of colors available by intermixing colors and by tinting with TEXOLITE Tube Colorants. Not recommended for use on floors or under highly humid conditions.

MULTI-COLOR FINISH

NEO FLECK MULTI-COLOR ENAMEL
(Odorless)

Intriguing, permanent multi-colored finish, scrubbable, durable, abrasion resistant. Soft, muted, easy-to-live with colors. Spray application only.

FORM
Liquid—two component packaging.

CHARACTERISTICS
Economical—fast application, quick drying, self-priming, high coverage, quick tenancy. No offensive odor, non-toxic, non-flammable, won't flash. Long storage life. Film thickness equal or exceeding two coats conventional paints.

PRIMING
No primer or "base" coat required over most surfaces. Prime unpainted metal, exposed nailheads, and some new wood finishes.

USES & LIMITATIONS
Over most interior, new or old surfaces in housing projects, commercial and industrial buildings; for maintenance work—quick rental unit reoccupancy. Color range increased by use of TEXOLITE Tube Colorants in base color. Not for floors or exteriors.

COATINGS

TEXOLITE DURA-DRI*
(controls water penetration)

White and tints. Heavy bodied protective coating for control of water penetration through porous masonry surfaces. Decorates and protects.

FORM
Powder.

CHARACTERISTICS
Easy, effective system for controlling water penetration through such porous masonry surfaces as brick, stucco, cement block, poured concrete and similar materials. Apply by brush or trowel.

PRIMING
Masonry surface should be thoroughly dampened immediately prior to application.

USES & LIMITATIONS
Over porous masonry surfaces above and below grade on interiors and exterior surfaces in homes, office and store buildings, schools, factories and warehouses. Not for use on floors. Additional attractive colors possible by overcoating with CEMENTICO, or TEXOLITE Vinyl Exterior.

TEXOLITE CEMENTICO*
(hydraulic cement paint)

White or tint paint for bringing new beauty, life and color to porous masonry surfaces.

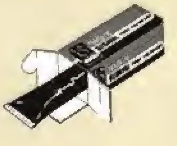
FORM
Powder.

CHARACTERISTICS
Made of white portland cement and other special ingredients to produce hardness, binding qualities and workability. Only lime-proof colors are used. Durable. Water resistant. Bonds to porous masonry surfaces.

PRIMING
Masonry surface should be dampened thoroughly immediately prior to application.

USES & LIMITATIONS
Use only over unpainted porous masonry surfaces such as brick, clay tile, portland cement stucco, concrete, unpolished building stone and similar surfaces. Not recommended on magnesite stucco, wood, painted or greasy surfaces, smooth plaster, terra cotta, glazed brick and tile, vibrated or very dense concrete areas, floors, asbestos-cement shingles and similar non-porous or non-masonry materials.

COLORANTS



TEXOLITE
TUBE COLORANTS

15 highly concentrated colorants providing wide range of tints and colors when blended with paints.

FORM
Liquid.

CHARACTERISTICS
Ready to use for tinting most interior water-thinned and spirit-thinned paints. Simply add, and stir. Blends in quickly.

PRIMING
Not applicable.

USES & LIMITATIONS
Easily blended tinting media for interior use. Stir in with paddle or place paint on mechanical shaker. Produces wide range of colors when added in recommended proportions to standard tints and white. Not recommended for tinting TEXOLITE Standard.

ENAMEL FINISH

TEXOLITE SEMI-GLOSS ENAMEL (Odorless—Alkyd)

Semi-Gloss available in white and tints. Provides beautiful soft sheen which is outstandingly washable.

FORM
Ready to use.

CHARACTERISTICS
An odorless, alkyd resin, spirit-thinned Semi-Gloss which is easily applied and self-leveling. Dries in 3 to 5 hours. Maintains excellent color and gloss retention, hide and durability.

PRIMING
New wood and unpainted metal, including exposed nailheads, should be specially primed. Over wallboard first apply coat of SHEETROCK Sealer or TEXOLITE Primer-Sealer. Over plaster, apply coat of TEXOLITE Primer-Sealer.

USES & LIMITATIONS
May be used over any dry, clean, sound paintable interior surface. Wide variety of colors available by intermixing and by tinting with TEXOLITE Tube Colorants. Not recommended for use on floors.

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*T.M. Reg. U.S. Pat. Off.

TEXOLITE
PAINT PRODUCTS

TEXTURE FINISHES

TEXOLITE TEXTURE
(rubberized sand)

A latex emulsion paint producing a slight sand finish effect combined with a light texture. Very attractive finish results. White and tints.

FORM
Ready to use.

CHARACTERISTICS
Dries quickly. Usually one coat treatment when applied with brush followed by roller, roller or spray. Washable. No objectionable paint odor.

PRIMING
Prime new wood and unpainted metal, including exposed nailheads. All other surfaces usually require only one coat Texolite Texture.

USES & LIMITATIONS
Over new and old, painted or unpainted, interior walls and ceilings in homes, offices, stores, shops, schools, churches, and on residential development projects. Not recommended under damp conditions. Wide variety of colors by tinting with Texolite Tube Colorants.

TEXTONE*
(plastic texture)

A plastic paint meeting the demand for a dependable, economical, easily applied texture medium capable of satisfying every requirement of modern decoration.

FORM
Powder.

CHARACTERISTICS
Textone properly applied forms a texture surface of superior hardness. Furnished in white only. Can be tinted with Texolite Standard or Texolite Tube Colorants, or can be coated with most types of wall paints.

PRIMING
No primer usually required.

USES & LIMITATIONS
For producing light, modern textures as well as the heavier period designs over any dry, solid clean interior surface. For decorating work over new plaster, gypsum wallboards, and insulating wallboards. Especially useful in refinishing cracked plaster surfaces; for producing stone effects, antique effects and stencil work.

TEXOLITE RIPPLE
(latex)

A smooth, stipple finish latex paint. Available in white and tints. Provides attractive finish.

FORM
Ready to use.

CHARACTERISTICS
Produces fine textures ranging from an "orange peel" to a moderate ripple-like effect. No painty odor. Use large brush and roller for fast application.

PRIMING
Prime new wood and unpainted metal, including exposed nailheads. All other surfaces usually require only one coat.

USES & LIMITATIONS
Over new and old, painted or unpainted, interior walls and ceilings in homes, offices, stores, shops, schools, churches and on residential development projects. Wide variety of additional colors by tinting with Texolite Tube Colorants.

USG* TEXTURE PAINT
(plastic)

A popular paint that is easy to use. It provides a wide range of texturing possibilities and is lower in price than Textone paint. Available in white.

FORM
Powder.

CHARACTERISTICS
A good working plastic paint for uses similar to those secured with Textone. Somewhat less coverage per pound. Provides excellent textures. Tints can be secured by tinting with Texolite Standard or Texolite Tube Colorants, or can be coated with most types of wall paints.

PRIMING
No primer usually required.

USES & LIMITATIONS
For interesting textures over dry, clean, solid surfaces such as new plaster, gypsum wallboards, insulating wallboards, etc. Also on old cracked plaster surfaces.

A-B TEX*

An economical, easy working texturing paint—white only to produce the popularly desired light to medium textureds.

FORM
Powder.

CHARACTERISTICS
Easy mixing—economical—readily applied with brush or roller over clean-dry-firm interior surfaces. Also used as a spackling treatment on poured concrete ceilings.

PRIMING
No primer usually required.

USES & LIMITATIONS
For use over any clean-dry-sound interior wall or ceiling surface of plaster (new or old) gypsum wallboard and insulating wallboard. When used as spackling treatment on concrete ceilings, first grind down fins and other projections, then lightly grind balance of ceiling to remove any form oil or grease. Use a trowel for this spackling operation.

UNITED STATES GYPSUM—The Greatest Name in Building

GENERAL OFFICES • 300 WEST ADAMS STREET • CHICAGO 6, ILLINOIS

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BUFFALO, N.Y.
CHARLOTTE, N.C.
CHICAGO, ILL.
CINCINNATI, OHIO
CLEVELAND HEIGHTS, OHIO (CLEVELAND)
CLIFTON, N.J. (NEWARK)
DALLAS, TEXAS
DENVER, COLO.
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STOCKS AVAILABLE FROM WAREHOUSES IN PRINCIPAL CITIES

A.I.A. File 19-D-3

TECHNICAL INFORMATION

USG® SHEATHING

UNITED STATES GYPSUM
The Greatest Name in Building
General Offices: 300 West Adams St., Chicago 6, Ill.

1960

UNITED
STATES
GYPSUM

A.I.A. File 19-D-3

USG* SHEATHING

DESCRIPTION

USG Sheathing is a fireproof gypsum sheathing material. It is made in large unit sheets ½″x2′x8′ and ½″x4′x8′, 9′ with a water-resistant "asphalted" gypsum core enclosed in a specially treated, water-repellent, heavy black paper. The long edges are V-tongued and grooved on 2′x8′ and square edge on 4′x8′, 9′.

FUNCTION AND UTILITY

Fireproof—The gypsum core is incombustible and will not transmit high temperatures until completely calcined—a slow process.

Resistance to Weather and Moisture—The gypsum in the core is thoroughly inter-mixed with asphalt type emulsion and the tough paper covering is given a special water-repellent treatment. This combination provides an amazing resistance to weather and makes possible open storage on the job, and exposure on the framing during construction without appreciable loss of structural value. No harmful warping or buckling. USG Sheathing is not a vapor barrier! It is designed to permit escape of water vapor that may penetrate the stud space. (See technical data for vapor permeability.)

Adds Structural Strength—Wet or dry, USG Sheathing provides unusual lateral bracing to the frame. (See technical data.)

Wind-Tight Joints—The precision formed, interlocking V-tongue and groove edges snugly fitted, minimize wind infiltration. With 4′x8′ vertically applied, edge joints abut on centers of supports.

Economical

a. Low material cost.
b. Full dimension—no face loss.
c. Minimum of waste.
d. Fast application—up to 1000 sq. ft. can be applied in eight hours.
e. Eliminates building paper except where required by local building regulations.

Compliance—USG Sheathing complies with the following standard specifications for gypsum sheathing board:

Federal Specification SS-S-276.

American Society for Testing Materials Standard Specification A.S.T.M. C79, for core-treated, water repellent gypsum sheathing.

USG Sheathing 4′x8′, 9′ is designed to meet FHA Circular 12 requirements for use without corner bracing.

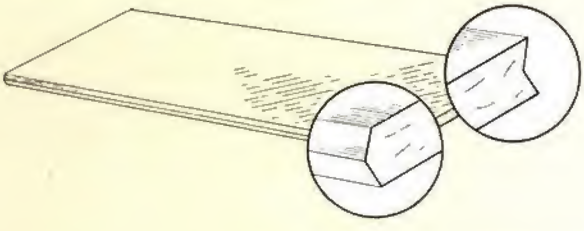
LIMITATIONS OF USE

1. Maximum Stud Spacing—USG Sheathing 2′x8′ is designed for use on stud spacing up to and including 24″ o.c.; 4′x8′, 9′, up to 16″ o.c.

2. Attachment of Exterior Finishes—Wood siding, wood furring strips, stucco mesh, wall ties, etc., shall be secured to the framing members by nailing through the USG Sheathing.

3. USG Sheathing is not recommended as a base for adhesive application of acoustical tile; use ½″ T&G BAXBORD Backing Board. Where a one hour fire-rated acoustical tile base is required, use ⅝″ BAXBORD Firecode Gypsum Backing Board, on open web steel joist—concrete floor construction. Refer to SHEETROCK* Wallboard AIA File Number 23-L, BAXBORD Backing Board section.

Tongue and Groove Edges (2′ x 8′)



USG Sheathing 2′x 8′ being applied to wood frame house

USG FIREPROOF ASPHALTED SHEATHING
PROOF ALTED THING
USG FIREPROOF ASPHALTED SHEATHING
USG FIREPROOF ASPHALTED SHEATHING

USG 4′ x 8′ Sheathing (Sq. Edge)

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*Trademark Reg. U. S. Pat. Off.

"USG" "SHADOW-LOCK" "SHEETROCK" and "BAXBORD" are registered trademarks and FIRECODE is a trademark owned by United States Gypsum and used by it to distinguish its products. "USG" identifies the particular gypsum board sheathing, "SHADOW-LOCK" identifies the particular attachment system for asbestos shingles, "SHEETROCK", "BAXBORD" and "FIRECODE" identify the particular gypsum board manufactured only by United States Gypsum

APPLICATIONS

General—USG Sheathing is an excellent base for wood siding . . . brick veneer . . . stucco . . . wood or asbestos siding shingles. Besides being the finest sheathing for housing, it can be used, exposed to the weather, as an economical siding for farm buildings . . . tobacco barns . . . construction facilities, where a decorative exterior finish is not required. USG Sheathing may be painted after six months exposure to the weather.

32″-48″ Asbestos Cement Siding Shingles. 32″ and 48″ Asbestos siding shingles may be applied directly over USG Sheathing by nailing asbestos through sheathing into framing members.

Panel type Wood Shake Siding. Panel type wood shake sidings, such as Shakertown, GLUMAC, mfrd. by Perma Products Co., Cleveland, Ohio, and SHAKE-A-PLY, mfrd. by the SHAKE-A-PLY Co., N. Portland, Ore., may be applied over USG Sheathing in accordance with the siding mfr. recommendations.

SHADOW-LOCK* ATTACHMENT SYSTEM

Description—USG SHADOW-LOCK Attachment System is a means of attaching standard size asbestos cement iding directly over USG Sheathing with precision-made aluminum channels and corner pieces. This method of attachment creates a striking deep shadow line not obtainable with regular nail on attachment, minimizes shingle breakage because nails do not penetrate the siding, and is economical because it is self-aligning and uses 5% less siding.

TECHNICAL DATA

1. Strength to Resist Lateral Distortion—Comparative tests were conducted in USG Research Laboratories and attested by Phil C. Huntly, Consulting Engineer. Tested dry, USG Sheathing applied to an 8′x8′ panel of 2″x4″ framing on 16″ centers had a lateral distortion of .498″ under a racking load of 1850 lbs.

A similar panel was subjected to the equivalent of 5½ years of average United States rainfall in a giant "weatherometer" and with the same load of 1850 lbs. the distortion was only 1.125 inches.

Under this same load a similar frame sheathed with 1″x8″ dry wood sheathing resulted in a distortion of 10.312 inches.

2. Insulation—For ½″ USG Sheathing the thermal conductance is 2.86 and thermal resistance is 0.35.

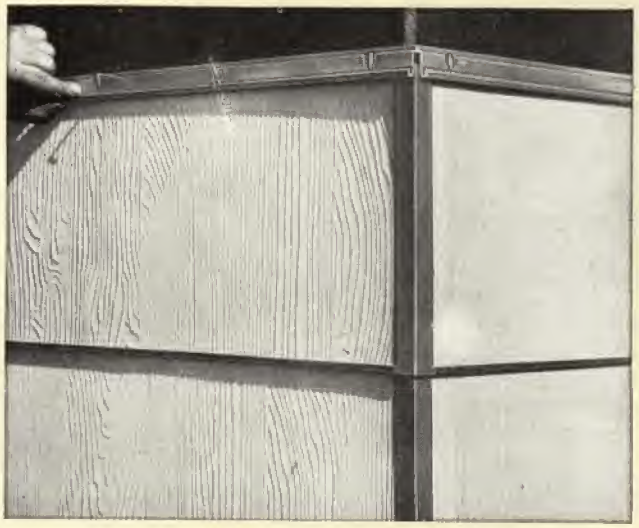
3. Vapor Permeability—USG Sheathing has an average ermeability of 27.3 perms. (One perm equals 1 grain er sq. ft. per hour per inch of mercury vapor pressure difference.)

Gypsum Sheathed Panels Without Corner Bracing

(1) Results of Racking Study of ½ in. Thick 4′x 8′ USG sheathing

Condition	At 1200 lb. Load		At 2400 lb. Load		Maximum Load lb.
	Deflection In.	Set In.	Deflection In.	Set In.	
DRY	.089	.016	.230	.107	6000
WET	.093	.032	.278	.130	4530

(1) Based on averages of three panels tested at a nationally recognized testing laboratory.



Application of USG SHADOW-LOCK Attachment System

A Finished Home on which USG SHADOW-LOCK System was used

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*T. M. Reg. U. S. Pat. Off.

USG SHEATHING

SPECIFICATIONS FOR USG SHEATHING

NOTE TO ARCHITECT

1. Federal and A.S.T.M. Specifications—USG Sheathing complies with Federal Specifications for Gypsum Sheathing Board. SS-S-276 and A.S.T.M. (American Society for Testing Materials) Standard Specifications, A.S.T.M. Designation: C79 for core-treated, water repellent gypsum sheathing.

SCOPE

Unless otherwise shown on plans, all exterior walls shall be sheathed according to these specifications.

MATERIALS

Sheathing shall be USG Sheathing as manufactured by the United States Gypsum Company, ½″x24″x8′0″ or ½″x48″x8′0″, 9′0″.

Nails shall be galvanized, 7/16″ head diameter, 1½″, or 1¾″ long roofing nails, having No. 11 gauge barbed shanks.

Staples shall be 16 gauge galvanized divergent point, nominally ½″ wide, 1½″ long.

APPLICATION

Apply USG Sheathing 2′x8′ with the long dimension across the supports and with the groove edge down interlocking the tongue and groove edges. Ends of sheets shall abut over centers of supports, and all end joints shall be staggered. Fit snugly around all window and door openings.

Apply USG Sheathing 4′x8′ or 9′ with the long dimension parallel to the supports. Edges of the sheets shall abut over centers of supports. Fit snugly around all window and door openings.

ATTACHMENT

Nail USG Sheathing 2′x8′ shall be nailed 8″ o.c. to studs (4 nails per 2′ width per stud) when either the application of the exterior finish following sheathing application provides supplemental nailing through the sheathing into the studs or diagonal bracing is installed. Otherwise, gypsum sheathing shall be nailed 4″ o.c. to studs (7 nails per 2′ width per stud).

USG Sheathing 4′x8′ or 9′ shall be nailed 4″ o.c. around the entire perimeter of the board and 8″ o.c. on intermediate framing members.

Staple USG Sheathing 2′x8′ shall be stapled 8″ o.c. to studs (4 staples per 2′ width per stud) when either the application of the exterior finish following sheathing application provides supplemental nailing through the sheathing into the studs or diagonal bracing is installed. Otherwise, gypsum sheathing shall be stapled 4″ o.c. to studs (7 staples per 2′ width per stud). Staples shall be driven parallel to the long dimension of the framing members. Staple head shall be driven flush to the sheathing surface and shall not break through sheathing paper.

OPTIONAL INCLUSIONS

1. Wood Siding Over USG Sheathing

Apply siding directly over USG Sheathing, securing it with nails driven through sheathing and into studs. Nails shall have a minimum penetration of 1¼″ into the studs. End joints of siding shall be over center of studs.

2. Masonry Veneer Over USG Sheathing

Masonry ties shall be attached with nails driven through the sheathing and into the studs, using nails of sufficient length to penetrate 1¼″ into the studs. (At least 6d common nails.) Ties shall be spaced vertically to conform with coursing of masonry veneer.

3. Stucco Over USG Sheathing

Stucco may be applied over USG Sheathing by the use of USG Stuccomesh applied with stucco furring nails providing at least 1⅛″ penetration into studs. See Sweet's catalog or AIA file 20-B.

SPECIFICATIONS FOR USG SHADOW-LOCK ATTACHMENT SYSTEM (Short Form)

SCOPE

Unless otherwise shown on plans standard size straight edge asbestos cement siding shingles shall be applied to all exterior walls over gypsum sheathing and held in place by means of the USG SHADOW LOCK Attachment System.

MATERIALS

Channels shall be USG SHADOW-LOCK Channels as manufactured by the United States Gypsum Company.

Corners shall be USG SHADOW-LOCK Corners 11½″ long as manufactured by the United States Gypsum Company.

Nails shall be USG SHADOW-LOCK Nails 12 gauge galvanized 1¾″ long with a diamond point and ⅝″ hook head.

APPLICATION

The channels, corners and straight edge asbestos shingles shall be applied and secured in strict accordance with the recommendations of the manufacturer of the attachment system.

AIA File 3-C

TECHNICAL INFORMATION

LIME

FOR MASONRY MORTAR

UNITED STATES GYPSUM

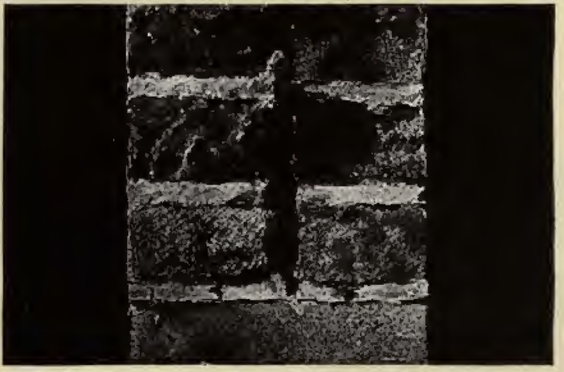
1960

AIA File 3-C

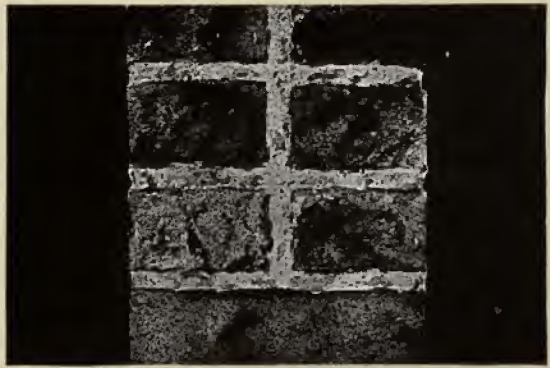
LIME FOR MASONRY MORTAR

A good mortar spreads easily and resists suction of brick.

A plastic mortar flows with light pressure and encourages good workmanship.



Harsh mortar is conducive to poor workmanship and unfilled joints.



Good mortar encourages good workmanship and well filled joints.

BASIC REQUIREMENTS OF GOOD MASONRY MORTARS

Good masonry walls are expected to be water and weather resistant, and durable with a minimum of maintenance. The essential factors in obtaining such results are:

1. Good Masonry Units—with rate of water absorption (suction), neither too high nor too low.
2. Good Workmanship—Full joints.
3. Good Mortar—which is readily placeable and provides complete and uniform bond with the units by virtue of its high plasticity and water retentivity. It must be durable, weather resistant, possess adequate strength, and be economical.

Assuming a satisfactory masonry unit, then good workmanship and good mortar are so closely allied that neither can be sacrificed without jeopardizing the required results.

FUNCTION OF LIME IN GOOD MASONRY MORTAR

A good lime, mixed in the proper proportion with portland cement, proper sand, and water, imparts the following required characteristics to masonry mortar:

Plasticity—Lime is both a cementitious and a plasticizing agent. With a given cement and sand, the plasticity of the resulting mortar will vary with the plasticity of the lime. A highly plastic lime is essential to ready placeability of the mortar for well filled joints and water resistant walls. Plasticity is measured by the Emley Plasticimeter. The higher reading enhances the desirable characteristics.

Water Retentivity—Water retentivity is the ability of mortar to resist suction of the masonry units. A good lime imparts high water retentivity to the mortar. Mortars of high water retentivity bond more uniformly to masonry units before hardening, minimize need for retempering, thereby producing more water resistant joints and minimizing danger of efflorescence. A.S.T.M. mortar specifications require 70 per cent minimum "flow after suction" of mortar as delivered to the mason.

Adequate Strength—Strength of mortar, should conform to A.S.T.M. requirements. **High lime content mortars possess adequate strength for all normal building requirements.**

Low Cost—

(a) Mortars having the above characteristics are conducive to rapid, easy, economical, and neat workmanship.

(b) Minimum droppings—Minimum mortar waste.

(c) Low maintenance cost.

(d) Mortars are proportioned on a volume basis. A 50 lb. bag of hydrated lime contains approximately 1¼ cubic feet. A mortar mix of one bag of portland cement, two bags of lime and nine cubic feet of sand (1:2½:9) is one of the most economical mortars complying with the characteristics described above.

*Trademarks Reg. U.S. Pat. Off.

"MORTASEAL"* and "RED TOP"* are registered trademarks owned by United States Gypsum and are used by it to distinguish its products. "MORTASEAL" identifies the particular hydrated lime; "RED TOP" identifies the particular hydrate or high calcium quicklime and other building products manufactured only by United States Gypsum.

MORTASEAL* LIME

DESCRIPTION

MORTASEAL (Genoa, Ohio Mill) is a double hydrated Ohio dolomitic lime, and MORTASEAL (Farnams, Mass. Mill) is a quick-soaking, hydrated, high calcium lime (both less than 8 per cent unhydrated oxides). They meet the following specifications: A.S.T.M. C207, Type S; Federal Specifications SS-L-351, Type M, (also Type F though not designated as a finishing lime), including the added requirement of not more than 8% unhydrated oxides; National Lime Association Type S.

FUNCTION AND UTILITY

MORTASEAL lime qualifies most readily with all "Functions of Lime in good Masonry Mortar" described on preceding page as follows:

Plasticity—MORTASEAL develops exceptional plasticity and workability immediately upon mixing with water—either by machine or by hand. Emley Plasticity of MORTASEAL is 250 to 400. This permits a mortar of exceptional working qualities that is conducive to good workmanship and water resistant joints.

Eliminates soaking or slaking of lime.

High Water Rentenitivity—Mortar mixes of 1:2½:9 with MORTASEAL lime, as shown in data table, produced the unusually high "flow after suction" (resistance to suction) of 93 per cent.

(a) Facilitates better filling of masonry joints regardless of high or uneven suction.

(b) Conducive to a more complete, strong, uniform bond with masonry units.

(c) Decreases need for retempering.

Low Volume Change—Because of the 92 per cent hydration of MORTASEAL, volume change due to "unsound" material is negligible.

Ease of Mixing—MORTASEAL lime requires no soaking or slaking; is placed in mixer in dry state, direct from containers.

Adequate Strength: A 1:2½:9 mix of portland cement, MORTASEAL and sand complied with A.S.T.M. strength requirements for Type N mortar (750 pounds per square inch at 28 days). See Data page 4.

Lower in Cost because:

(a) No soaking or slaking required.

(b) High sand-carrying capacity.

(c) Minimum labor required to mix or apply.

(d) Less need to retemper.

(e) Less need to wet masonry units.

(f) A 1:2½:9 MORTASEAL mix is one of the lowest cost mortars.

AVAILABILITY

Available east of the Rocky Mountains.

LIMITATIONS OF USE

None.

RED TOP* MASONS HYDRATED LIME

DESCRIPTION

A normal hydrated lime, either dolomitic (less than 92 per cent hydration) or high calcium, for use in masonry mortar. Conforms with A.S.T.M. C207, Type N; Federal SS-L-351, Type M; National Lime Association Type N.

FUNCTION AND UTILITY

Plasticity—Properly soaked masons hydrated lime has an Emley Plasticity of 150-200, sufficiently high to be conducive to water resistant joints and easy-working mortar.

Water Retentivity—"Flow after suction" with a 1:1¼:6 and 1:2½:9 mix was found to exceed 70 per cent, adequate to insure a mortar of good bonding strength and adhesion and of sufficient workability to permit complete filling of joints. A 70 per cent value complies with ASTM standard minimum property requirement for water retentivity.

Low Volume Change.

Adequate Strength.

AVAILABILITY

Nationwide.

LIMITATIONS

1. Must be soaked overnight to develop maximum plasticity.

RED TOP* MASONRY QUICKLIME

DESCRIPTION

RED TOP high calcium quicklime is manufactured in both pulverized or pebble form. Conforms with A.S.T.M. C5-26; Federal Specifications SS-Q-351.

FUNCTION AND UTILITY

Properly slaked and aged, yields a putty which greatly enhances:

(a) Plasticity (300-500 Emley).

(b) Water retentivity approximately 85 per cent obtained for a 1:2½:9 mix.

(c) Workability for water resistant walls.

High Yield—Produces over 50 per cent more putty volume than hydrated lime.

Adequate Strength.

LIMITATIONS

1. For best results, quicklime must be of recent manufacture to avoid air slaking in container.

2. Must be handled carefully to avoid burning.

3. Extra slaking and aging time and equipment required.

4. Must be properly slaked and aged.

---

*T.M. Reg. U.S. Pat. Off.

LIME FOR MASONRY MORTAR

TECHNICAL DATA

Standards / Mortar Types	REQUIREMENTS OF ASTM DESIGNATION C270-54T: Property Specifications		Proportion Specification			AVERAGE TEST RESULTS USING USG LIMES: Job Mixes on Volume Basis	MORTASEAL		Red Top Masons Hydrate		Red Top Masons Quicklimes	
	Minimum Aver. Comp. Strength psi 28 Days	Flow After Suction Percent Minimum	Portland Cement (1)	Lime (2)	Sand (3)		Compressive Strength psi (4)	% Flow After (4) Suction	Compressive Strength psi (4)	% Flow After (4) Suction	Compressive Strength psi (4)	% Flow After (4) Suction
M (A-1)	2500	70	1	¼	2.8 to 3¾	1:¼:3¾	4924	69.0	4277	62.8	Not Tested	66.7
S (A-2)	1800	70	1	¼ to ½	2.8 to 4½	1:½:4½	3154	70.4	← Not Tested →			
N (B)	750	70	1	½ to 1¼	3.4 to 6¾	1:1¼:6	2150	80.6	1953	77.2	1420	87.5
						1:1¼:6¾	1750	78.0	← Not Tested →			
O (C)	350	70	1	1¼ to 2½	5.1 to 10½	1:2½:9	916	93.3	853	85.6	550	89.0
						1:2½:10½	663	78.0	← Not Tested →			
K (D)	75	70	1	2½ to 4	7.9 to 15	1:4:15	203	88.3	110	80.6	Not Tested	82.0

Mortar type designations in parentheses are former type designations in effect prior to 1954.

NOTES:

(1) PORTLAND CEMENT—To comply with ASTM Designation C150, Type I, II or III; or ASTM Designation C175, Type 1A, IIA, or IIIA.
(2) LIME—To comply with ASTM Designation C5 (Quicklime) or ASTM Designation C207 (Hydrated) Type N or S.
(3) SAND AGGREGATE—To comply with ASTM Designation C144 and to be not less than 2¼ and not more than 3 times the sum of the volumes of the cement and lime used, measured in a damp and loose condition.
(4) Based on mortars as delivered to mason having initial flows between 100 and 115%.

CONCLUSIONS:

A 1:½:4½ mortar with MORTASEAL complied with Type M Property Specifications.
A 1:1¼:6 mortar with MORTASEAL or RED TOP Masons Hydrate complied with Type S Property Specifications.
A 1:2½:9 mortar with MORTASEAL or RED TOP Masons Hydrate complied with Type N Property Specifications.

SPECIFICATIONS

(The following are offered as desirable inclusions in any masonry specification, and are not intended as a complete section covering Masonry Specifications.)

GENERAL PROVISIONS

All masonry materials shall be heated to a temperature such that they will remain above 35° F. until they have been placed and suitably protected.

Masonry shall be protected against freezing for at least 48 hours after placing. Unless such precautions against freezing are taken, no masonry shall be built when temperature is below 32° F. on a rising temperature, or below 40° F. on a falling temperature. No masonry shall be laid on walls that are frozen or contain frost.

MORTAR MATERIALS

Lime—shall be: (*select one*)
(MORTASEAL)
(RED TOP Masons Hydrated Lime)
(RED TOP Masons Quicklime)
manufactured by United States Gypsum Company.

Portland Cement—shall conform to (Federal Specification SS-C-192 Type 1) (ASTM C150 Type 1).

Sand—shall conform to Specifications for Aggregate for Masonry Mortar, ASTM C144.

Water—used in mixing mortar shall be clean and free from deleterious amounts of acids, alkalies or organic materials.

LIME PREPARATION (*select one*)

(MORTASEAL shall be mixed without soaking or slaking.)
(RED TOP *Masons Hydrated Lime* shall be soaked at least 16 hours before using.)
(RED TOP *Masons Quicklime* shall be slaked and aged for at least 16 hours, or until the putty temperature is 80° F. or less.)

MORTAR MIX

1. Above Grade—Mortar made from materials complying with the above specifications shall be mixed in proportion of one bag portland cement, two bags lime (or two and one half cubic feet quicklime putty), to not more than nine cubic feet sand (1:2½:9).

2. Below Grade—Mortar made from materials complying with these specifications shall be mixed in proportion of one bag portland cement, one bag lime (or one and one quarter cubic feet quicklime putty), to not more than six cubic feet of sand (1:1¼:6).

3. Specialized Uses—

(a) For extra-strength, reduce proportion of sand (i.e. 1:2½:8 or 1:1¼:5, but not less than 1:2:6¾ or 1:1:4½).
(b) For extreme strength or under excessive moisture conditions, reduce lime content (viz. 1:1/4:3).
(c) For glass block, use 1:1:5 mix.
(d) For power plant chimneys, use 1:2:5 mix.
(e) For ceramic tile, use 1:1:6 mix.
(f) For gypsum tile, use one part RED TOP Partition Tile Cement and three parts sand by weight.

WORKMANSHIP

Note to Architect: Detailed workmanship specifications will vary, depending on type of job and building units involved. However, it is suggested that on all masonry work, the following be incorporated:

1. Mortar shall be laid in a uniform bed without furrows and all joints shall be completely filled. Sufficient mortar shall be placed in mortar beds and in head and collar joints to completely fill all spaces between masonry units.

2. Highly absorbent brick shall be wetted (not *soaked*) before laying.

3. Mortar materials shall be accurately proportioned and thoroughly mixed. Retempering with additional water shall be kept to a minimum. Mortar which has been mixed for more than 2 hours shall be discarded.

TECHNICAL INFORMATION

E-Z WALL

MOVABLE PARTITIONS

UNITED STATES GYPSUM

1960

UNITED STATES GYPSUM

simplified planning, construction and relocation

The E-Z Wall "Simplicity" design offers the best and fastest solution to space control problems in offices, commercial buildings and institutions.

In contrast to other movable partition systems that require up to 350 separate parts, E-Z Wall has less than 30 parts! Basic components are multi-purpose and fully modular. This modular construction simplifies layout, eliminates the need for special panels and fillers, and permits on-the-job adaptation with a minimum of cutting.

E-Z Wall partitions are as attractive and serviceable as permanent installations. They are made of strong, incombustible laminated gypsum board, held in place by open web steel studs that provide raceways for service wiring and piping. E-Z Wall partitions are always reusable, and may be relocated easily when space requirements change.

When you have a space control problem, consult your local USG Architect Service or Industrial Sales representative.

E-Z Wall layout, and estimates for initial installations, additions or relocations will be furnished by the USG Partition Contractor without obligation.

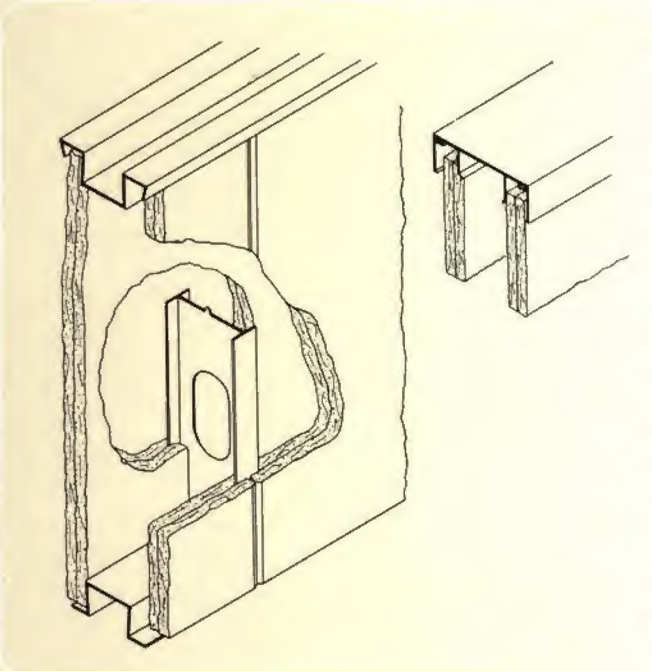
DESCRIPTION

E-Z Wall partitions are flush-panel-type, 3⅜″ thick. Each panel consists of two pieces of ⅜-inch thick gypsum board, mill-laminated to form a ¾-inch thick sheet in standard form ready for paint application following standard painting procedures. (Vinyl faced panels are also available in 3 standard colors.) A roll-formed H-shaped stud holds panels in place (flanges of stud slip into the lamination of the panel). Partition units are erected on a simple hat-shaped, continuous floor runner. Ceiling-height partitions are inserted into a ceiling runner. Openings for windows and door frames are standard extruded aluminum sections. (See diagram.)

Sizes and Types

Railing Height Partitions available up to 48″ in height. May be furnished with a finished rail cap or with glass above the rail.

Cornice and Ceiling Height Partitions available to a maximum of 10′. May be furnished solid, with windows, or in continuous glass variations. Window sizes are fully flexible in both height and width without the use of special parts.



FUNCTION AND UTILITY

Flexibility

Multi-purpose, modular parts are used in all types of partitions (no special panel sizes or fillers are necessary). Railing heights, window sizes, and door sizes may be revised on the job without special parts or extensive labor.

Sound Control

Resistance to sound transmission of the basic partition, exclusive of openings, is equivalent to, or greater than, the loss reported for some wood stud-gypsum lath and plaster partitions.

Fixtures

Open-web steel studs provide ample raceways for wiring. Outlets may be cut into panel and located for convenience. Wall-hung fixtures—lights, chalkboards, and other lightweight fixtures may be attached directly to panels.

Fire Resistance

All materials in E-Z Wall partitions—gypsum board, steel structural members, aluminum trim—are incombustible.

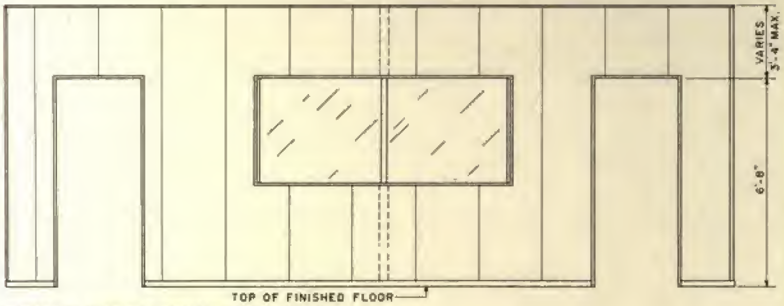
Maintenance

All exposed aluminum members are etched and anodized to provide a neutral gray finish that requires little maintenance. The optional vinyl plastic-faced panels, integrally decorated in a choice of 3 U.S.G. standard colors, may be washed with mild detergent.

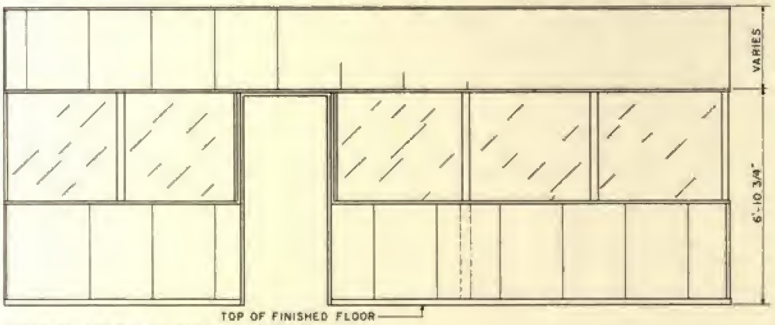
LIMITATIONS OF USE

E-Z Wall partitions should not be used as load-bearing members, or where they are exposed to excessive moisture.

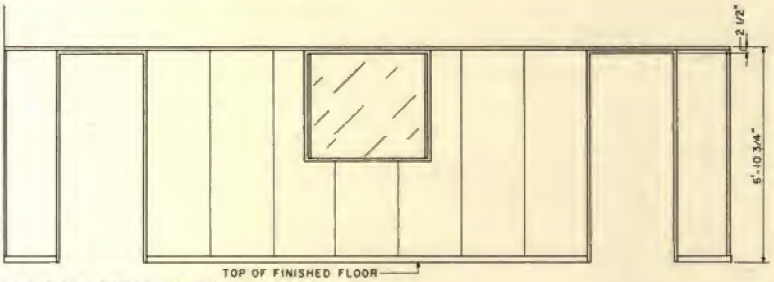
details sections and elevations/no scale



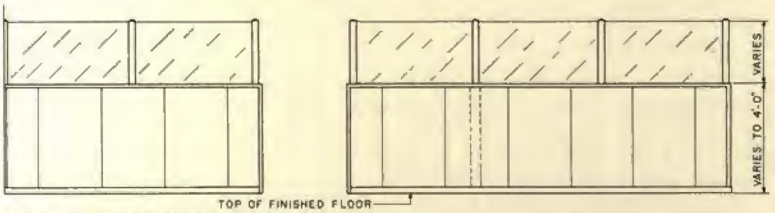
CEILING HEIGHT WALL ELEVATION



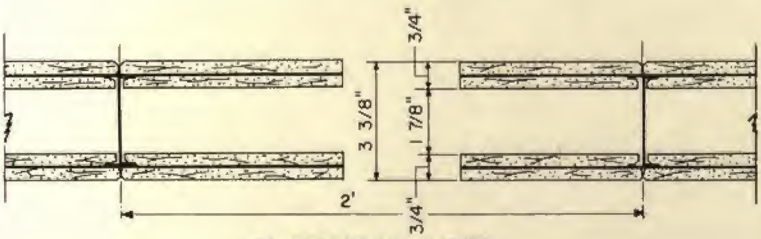
GLAZED HEIGHT WALL ELEVATION



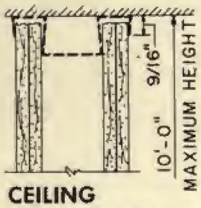
CORNICE HEIGHT WALL ELEVATION



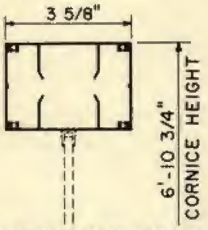
RAILING HEIGHT WALL ELEVATION



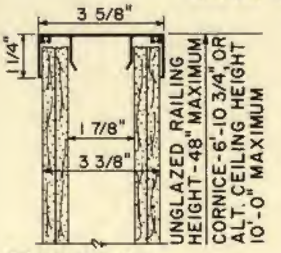
2' MODULAR PANEL



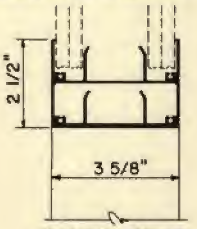
CEILING CONNECTION



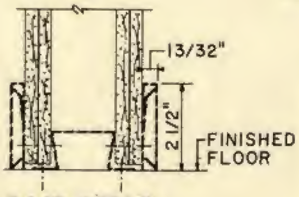
DOOR OR WINDOW HEAD CORNICE HEIGHT


3 5/8"
1 1/4"
1 7/8"
3 3/8"
UNGLAZED RAILING HEIGHT-48" MAXIMUM
CORNICE-6'-10 3/4" OR ALT. CEILING HEIGHT 10'-0" MAXIMUM

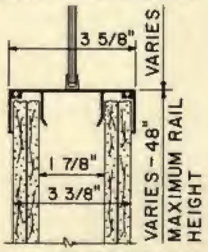
CORNICE OR RAIL CAP



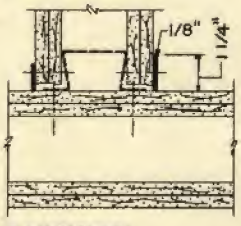
DOOR HEAD GLAZED PARTITION



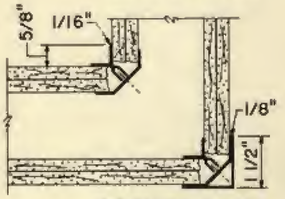
BASE DETAIL



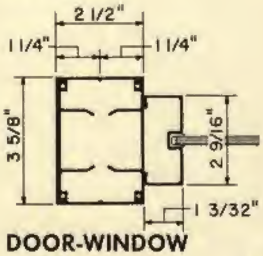
WINDOW SILL



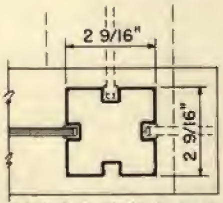
PARTITION "T" WALL



CORNER POST ASSEMBLY

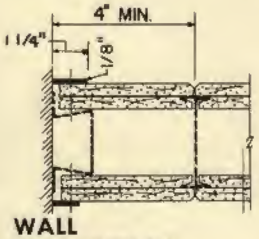


DOOR-WINDOW JAMB

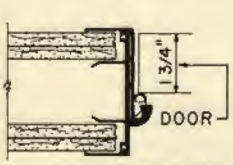


RAILING HEIGHT END POST-PARTITION CORNER AND TEE INDICATED

GLAZING POST



WALL INTERSECTION



DOOR FRAME DETAIL

E-Z WALL
MOVABLE PARTITIONS

SPECIFICATIONS

scope

Furnish and erect E-Z Wall partitions as indicated on the plans and specified hereunder. Partitions are to be flush-panel-type, 3⅜″ thick, (railing, cornice, and/or ceiling height) as supplied by the United States Gypsum Company.

shop drawings

Shop drawings showing layout and details of construction, when required, shall be submitted for approval.

materials

A. Laminated gypsum board panels shall be ¾″ thick by 24″ wide by appropriate height. The panels shall have accurately formed off-set edges for concealed attachment to steel studs.

B. Steel studs shall be open web type, formed from 23-gauge electro-galvanized steel.

C. Floor runners (and ceiling runners in ceiling height partitions) shall be formed from 23-gauge electro-galvanized steel. Floor and ceiling runners shall have formed-in spacers to hold panels in alignment. (Ceiling runners shall have integral trim to conceal top edges of panels.)

D. Base trim shall be 18-gauge, 2½″ high, with 7/16″ projection. Base trim shall be snapped on over 18-gauge base trim clips, provided at maximum spacing of 24″.

E. Door frames shall be formed of an extruded aluminum door buck and an extruded aluminum insert. Door bucks shall provide a finished opening into which an insert is fitted to provide door stops and hardware mortises. Wood doors, furnished by partition contractor, shall be 1¾″ thick by appropriate width up to 3′0″ by 6′8″ high. Continuous removable plastic strikes shall be provided for quiet operation of doors and to lessen sound transmission.

F. Door hardware consisting of three 4½″ by 4½″ butts and key-in-knob lock shall be furnished in US 28 finish by the door supplier. (Door frames equipped for special hardware available at slight extra cost.)

G. Window frames shall be of sizes indicated on the plans and shall be built up from standard extruded aluminum parts. Glass shall be furnished by the partition contractor and shall be set in plastic glazing channels colored to match the window frame.

finish

A. Laminated gypsum board panels shall be supplied with a mill-applied vinyl plastic film. Film shall be integrally colored and shall be embossed. Color to be a standard U.S.G. color, as selected.

or

Laminated gypsum board panels shall be supplied with a manila-finished paper surface ready for field decoration. (If painting is to be part of the partition work, include complete painting specifications.)

B. Exposed aluminum members shall be etched and anodized to provide a permanent finish of neutral gray color.

installation

Lay out the partition and locate all floor attachment clips for end posts and door frames. Floor runners and floor attachment clips shall be securely anchored to the floor. Assemble and install cornice and/or rail and/or ceiling runner. Install gypsum board panels, studs, and trim members in accordance with U.S.G. installation methods.

workmanship

The finished partition shall be rigid, plumb, with horizontal lines leveled; neat in appearance, and free from defects in workmanship. All connections to walls, floors, ceilings, cornice sections, and connections between gypsum board panels shall be concealed. If doors are hung by the partition contractor, hardware shall be adjusted to proper working order.

UNITED STATES GYPSUM—The Greatest Name in Building

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(PROVIDENCE)

TECHNICAL INFORMATION

PYROBAR*

GYPSUM PARTITION TILE

UNITED STATES GYPSUM

1960

*T.M. REG. U.S. PAT. OFF.

PYROBAR*

GYPSUM PARTITION TILE

DESCRIPTION

PYROBAR is a precast gypsum partition tile. It is made in various thicknesses, both solid and hollow, with indented surfaces to receive plaster.

Sizes:	
2″ x 12″ x 30″ Solid	4″ x 12″ x 30″ Hollow
3″ x 12″ x 30″ Hollow	6″ x 12″ x 30″ Hollow

Complies with ASTM Designation C52 and Federal Specification SS-T-316.

FUNCTION AND UTILITY

Fireproof—gypsum is incombustible and will not communicate high temperatures until completely calcined, a very slow process. Fire resistance ratings shown in technical data below.

Light Weight—saves structural steel—generally 30% to 50% lighter than other masonry partitions of like thickness. Unit weights shown in technical data below.

Plaster Bond—Authoritative tests show that gypsum plaster bonds to PYROBAR Partition Tile with factor of safety of 173.

Saves Plaster—the large size, machine moulded units lay accurately to a straight line. Grounds are 5⁄8″.

Resistance to Sound Transmission—Increase of sound transmission loss is obtainable by furring one side of partition using USG Resilient Systems (See technical data below and AIA File No's 20-B and 20-B-2)

Low in Cost Because:

(a) Material cost is low.
(b) The large units (2½ sq. ft. surface area) lay into wall fast, thus reducing labor costs.
(c) Lightness in weight reduces labor costs.
(d) Fewer joints, saves mortar up to 40%.
(e) Ease of cutting reduces waste, and lowers cost of alterations or remodeling.
(f) Requires less plaster than other masonry units due to precision dimensions of moulded units.

LIMITATIONS OF USE

1. PYROBAR, although having a considerably higher compression strength than 75 lbs. per sq. inch gross area as required by ASTM Designation C52, is designed for non load-bearing partitions and should not be used for load bearing construction.
2. Portland cement and lime mortars do not bond adequately with PYROBAR and should not be used for erecting PYROBAR. Use RED TOP* Gypsum Cement Plaster for plastering and RED TOP Partition Tile Cement for mortar. See specifications.
3. For the reason given above, portland cement or line plasters should not be used over PYROBAR. Before applying portland cement bedding for ceramic tile, metal lath shall be nailed to PYROBAR. Alternately, other types of masonry, such as structural clay tile may be used as backing for ceramic tile.
4. 2″ Solid PYROBAR shall not be used for partitions. Shall be used for furring and column fireproofing only.

TECHNICAL DATA

PARTITION	Thickness	Wt. Per Sq. Ft. (Pounds)	Limiting Height (Feet)	Fire Rating (Hours)*	SOUND TRANSMISSION LOSS (DECIBELS)									
					Sound Frequency (cycles per second)									Avg. Loss
					125	175	250	350	500	700	1000	2000	4000	
3″ Hollow PYROBAR														
Unplastered	3″	11.0	13	1	—	—	—	—	—	—	—	—	—	—
Plastered One Side	3⅝″	16	13	1½	—	—	—	—	—	—	—	—	—	—
Plastered Two Sides	4¼″	22	13	3†	40	38	34	31	39	42	44	48	48	40
4″ Hollow PYROBAR														
Plastered One Side	4⅝″	19	17	3	—	—	—	—	—	—	—	—	—	—
Plastered Two Sides	5¼″	24	17	4	37	42	42	41	38	42	45	49	49	43
6″ Hollow PYROBAR														
Plastered Two Sides	7¼″	33	30	5 (est.)										
RESILIENT PARTITION														
3″ Hollow PYROBAR														
Plastered Two Sides	5¼″	23	13	—	38	40	37	40	44	48	51	56	59	46
One side furred with metal lath.					—	—	—	—	—	—	—	—	—	—
3″ Hollow PYROBAR														
Plastered Two Sides	5⅜″	22	13	—	42	41	43	46	48	51	53	56	60	49
One side furred with gypsum lath.					—	—	—	—	—	—	—	—	—	—
4″ Hollow PYROBAR														
Plastered Two Sides	6¼″	26	17	—	45	44	44	47	50	53	55	56	59	50
One Side furred with metal lath.					—	—	—	—	—	—	—	—	—	—
COLUMN FIREPROOFING														
2″ Solid—														
Plastered Exposed Side	2⅝″	16	—	4										
3″ Hollow—														
Plastered Exposed Side	3⅝″	16	—	4										

*All tests made at nationally recognized testing laboratories. All ratings tabulated are based on PYROBAR laid in gypsum-sand mortar and plastered to ½″ ground with gypsum-sand (1:3) plaster.

†3″ Hollow PYROBAR laid in gypsum-perlite mortar and plastered (two sides) to ½″ grounds with gypsum-perlite (100:3½) plaster had a Fire Endurance Time of 3 hours 55 minutes and passed a 4-hour Fire and Hose Stream Test.

"PYROBAR", "RED TOP" and "ROCKLATH" are registered trademarks owned by United States Gypsum, used by it to distinguish its products. "PYROBAR" identifies the particular gypsum tile, "RED TOP" identifies the particular gypsum cement plaster, "ROCKLATH" identifies the particular gypsum lath or plaster base, manufactured only by United States Gypsum.

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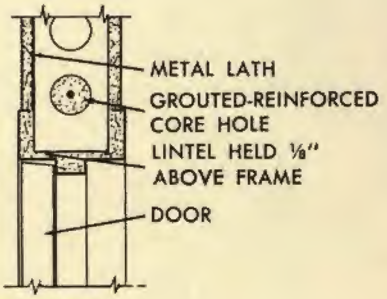
DOOR FRAME AND FRAMED OPENING DETAILS

Scale 1½" = 1'- 0"



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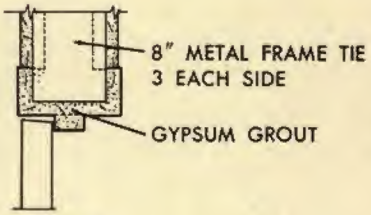
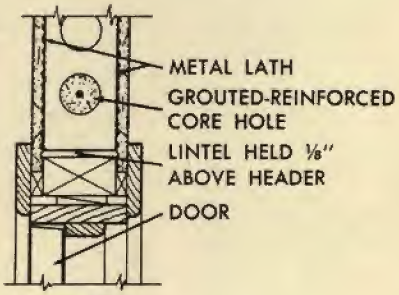


JAMB

METAL DOOR FRAME



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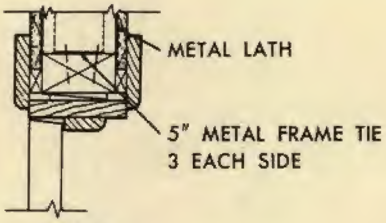
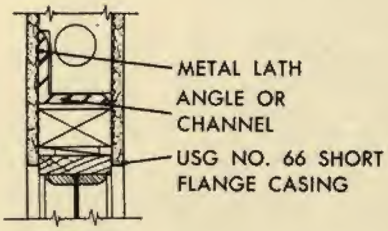


JAMB

WOOD DOOR FRAME



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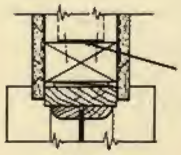

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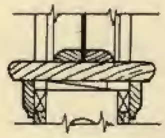
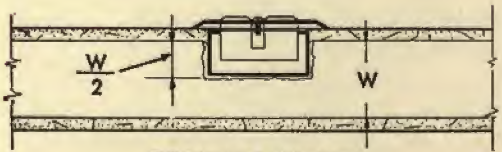


SILL

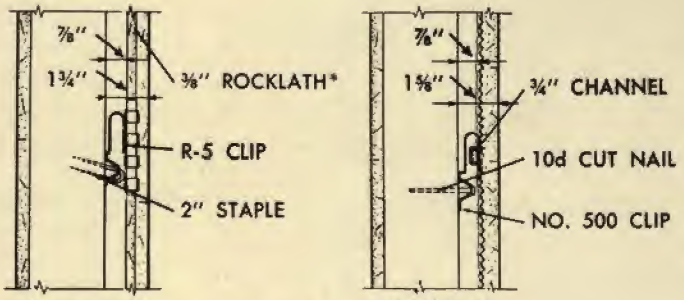
BORROWED LIGHT

MISCELLANEOUS—HORIZONTAL CROSS SECTIONS

Scale 1½" = 1'- 0"



CONDUIT CHASE



(Gypsum Lath) (Metal Lath)

RESILIENT FACING

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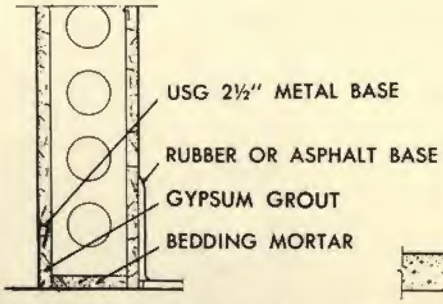
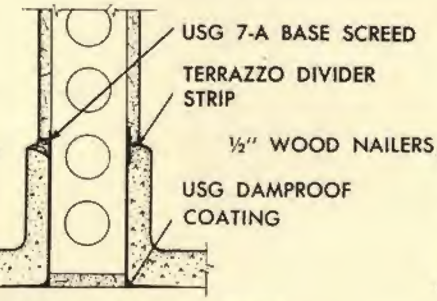
FLOOR BASE AND TRIM DETAILS

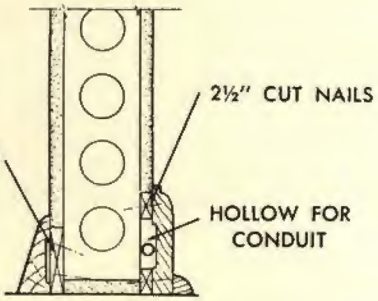
Scale 1½" = 1'-0"



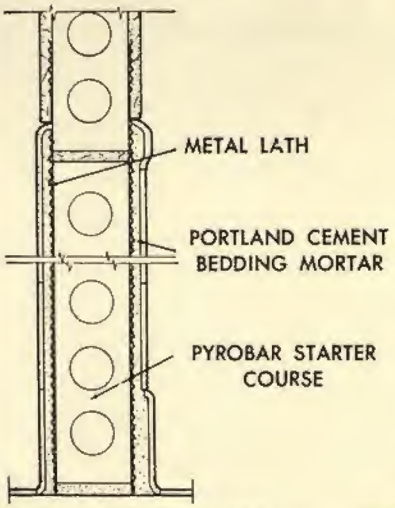
METAL AND RUBBER BASE



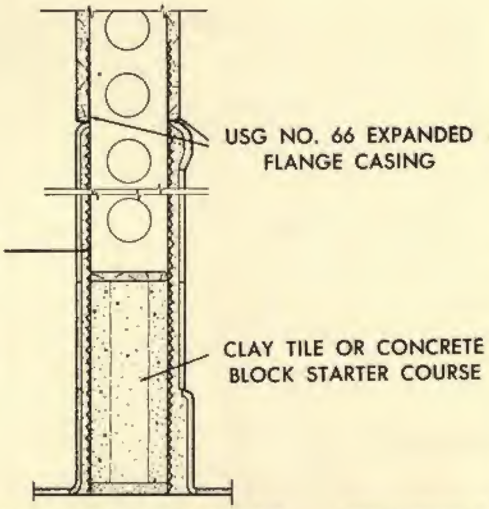
CEMENT AND TERRAZZO BASE



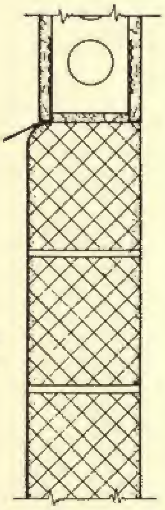
WOOD BASE



CERAMIC TILE WAINSCOT


USG NO. 66 EXPANDED FLANGE CASING
CLAY TILE OR CONCRETE BLOCK STARTER COURSE

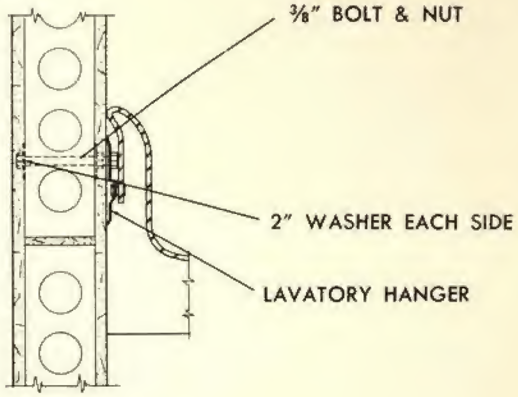
CERAMIC TILE WAINSCOT
(Alternate)



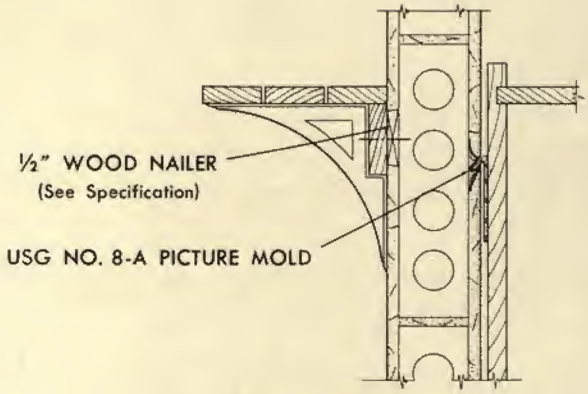
STRUCTURAL GLAZED TILE WAINSCOT

MISCELLANEOUS FIXTURE ATTACHMENTS

Scale 1½" = 1'-0"

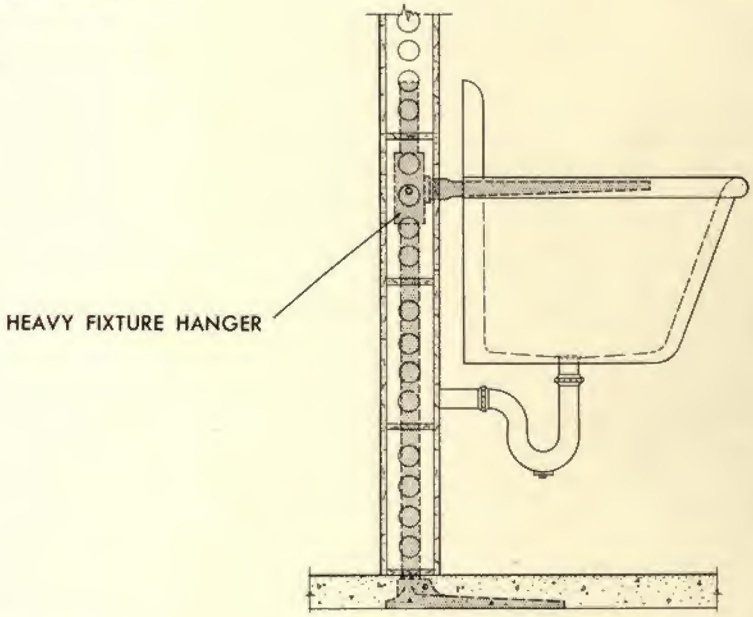


LAVATORY



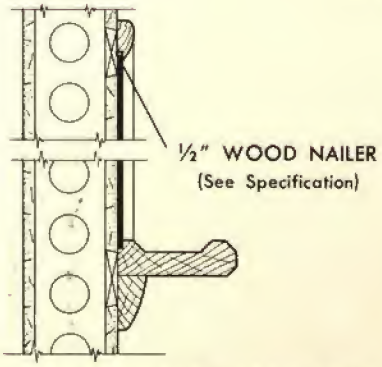
SHELF OR LIGHT CABINET

Scale ¾" = 1'-0"

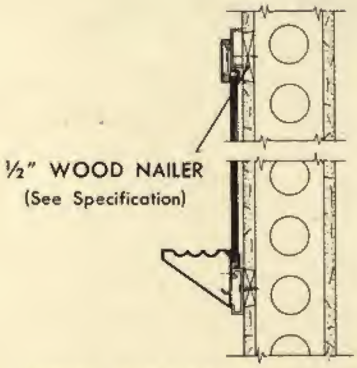


TYPICAL HEAVY FIXTURE
(Self-Supported)

Scale 1½" = 1'-0"



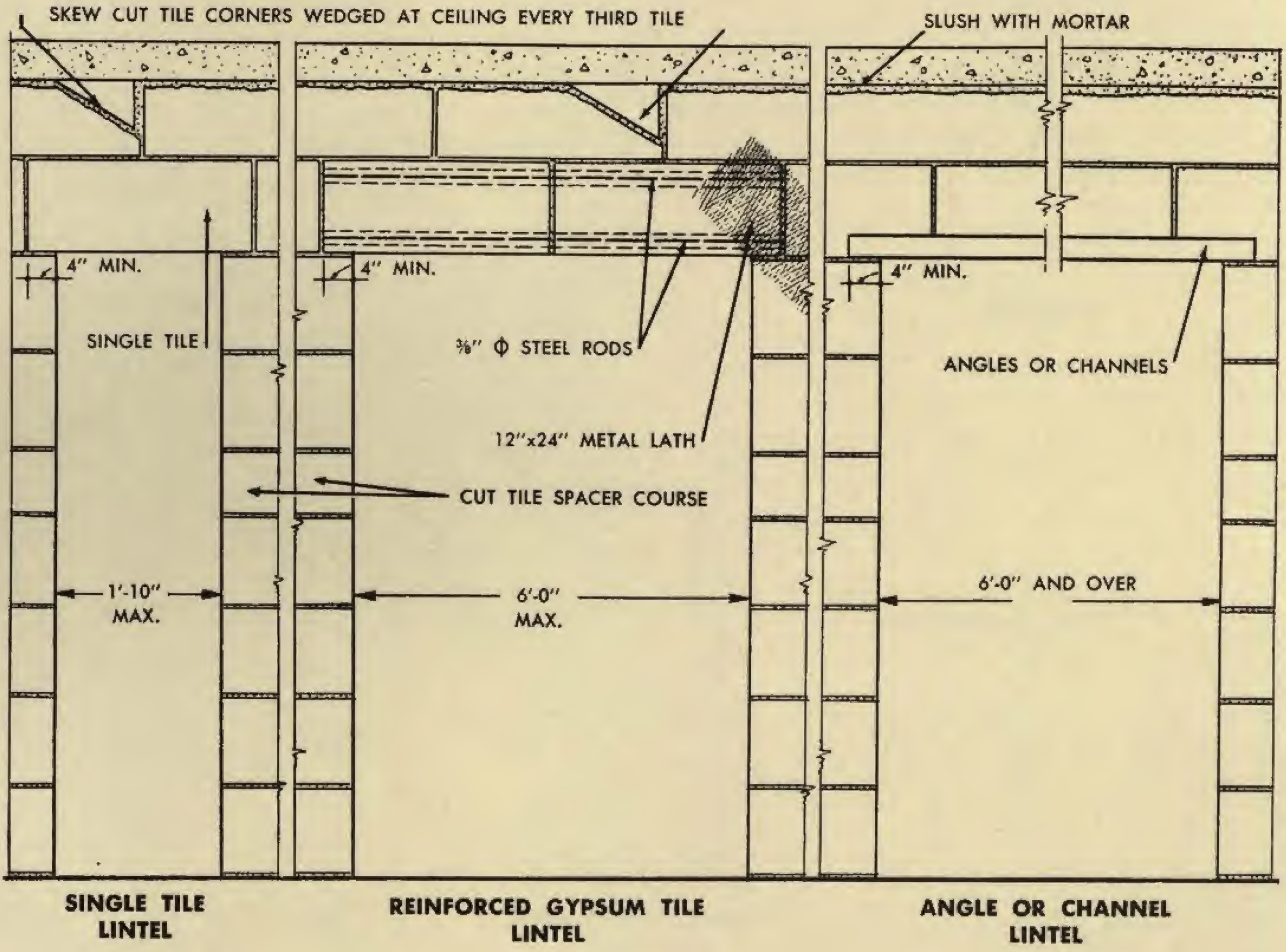
WOOD CHALKBOARD TRIM



METAL CHALKBOARD TRIM

LINTEL CONSTRUCTION

Scale ½" = 1'-0"



LINTEL CONSTRUCTION

1. When lintels are constructed of a single gypsum tile (max. opening 1'-10") a minimum bearing of 4" must be provided at each side of opening. First course of tile above lintel must be staggered so vertical joint falls at midpoint of opening.

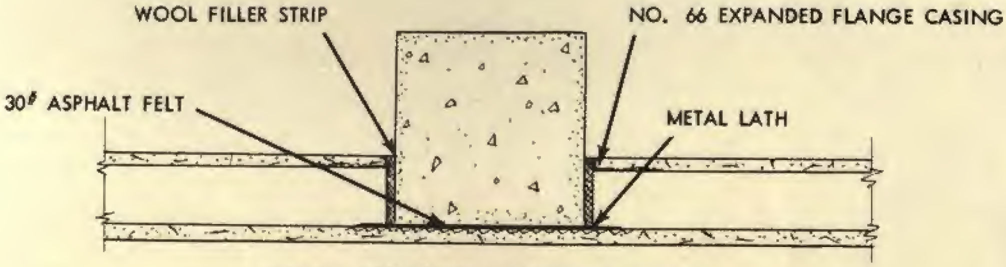
2. Gypsum tile lintels are constructed by filling the top and bottom core holes with gypsum mortar and reinforced with continuous ⅜" diameter steel rods.

3. For openings greater than 6'-0" a steel angle or channel of sufficient size must be used to form the lintel. Upstanding legs of channel or angle must be flush with face of gypsum tile and covered with metal lath if lintel is to be plastered.

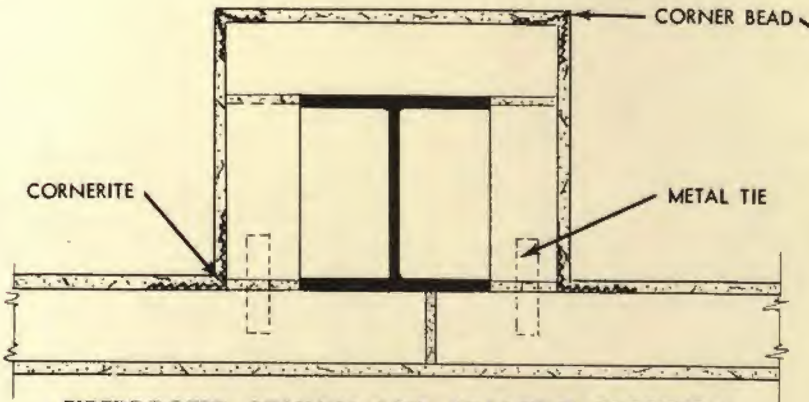
4. Wedge top course of gypsum tile partition to construction above using skew cut corners every third tile.

COLUMNS

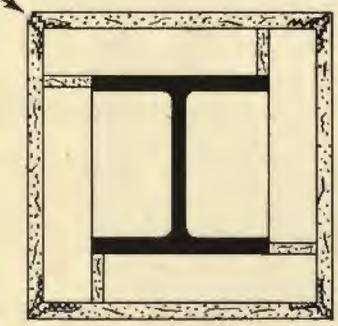
Scale 1½" = 1'-0"



FLUSH CONCRETE COLUMN DETAIL

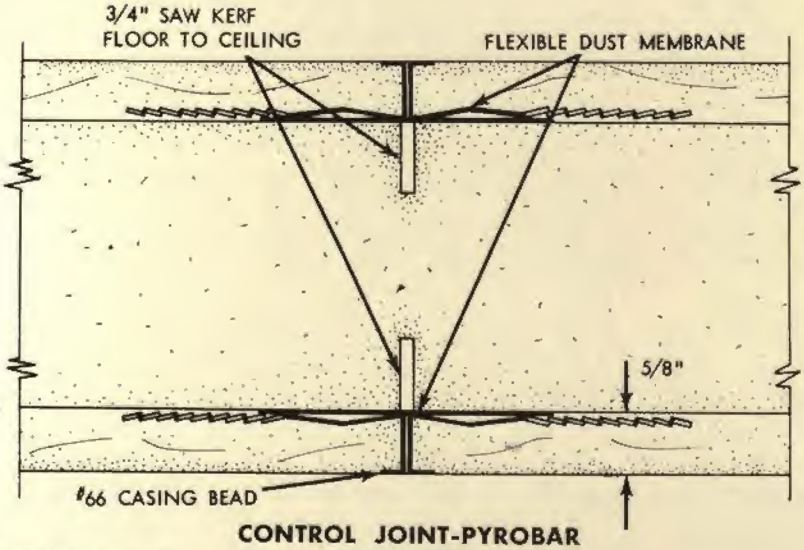


FIREPROOFED COLUMN AND ADJACENT PARTITION



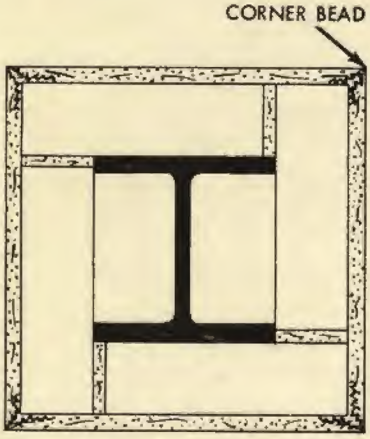
COLUMN FIREPROOFING DETAIL

(2" Solid Gypsum Tile)



CONTROL JOINT-PYROBAR PARTITIONS

Scale 6" = 1' – 0"



COLUMN FIREPROOFING DETAIL

(3" Hollow Gypsum Tile)

PYROBAR*
GYPSUM PARTITION TILE

SHORT FORM SPECIFICATION

Scope: Unless otherwise shown on plans, all partitions, including pipe chases, shafts, etc. shall be constructed of gypsum partition tile.

Materials:

Gypsum Partition Tile shall be PYROBAR, of sizes indicated as manufactured by United States Gypsum Company.
Cement for mortar shall be RED TOP Partition Tile cement as manufactured by United States Gypsum Company.
Sand for mortar shall be clean and sharp, complying with ASTM Designation C35.

Erection:

Erection of PYROBAR tile shall be in accordance with current directions as printed by the U. S. Gypsum Company.

LONG FORM SPECIFICATION

Scope: Unless otherwise shown on plans, all partitions, including pipe chases, shafts, etc. shall be constructed of gypsum partition tile.

Materials:

Gypsum Partition Tile shall be PYROBAR, of sizes indicated, as made by United States Gypsum Company.
Cement for mortar shall be RED TOP Partition Tile cement as made by United States Gypsum Company.
Sand for mortar shall be clean and sharp, complying with ASTM Designation C35.

Erection:

All mortar shall be mixed in proportions of 1 part Partition Tile Cement to 3 parts sand, by weight. Mortar shall not be retempered.

After door frames are erected and rough plumbing and wiring is in place, the first course shall be laid with core holes horizontal by bedding in mortar to a true and straight line according to partition layout as shown on plans. Succeeding courses shall be laid to a line in ½" thick full mortar beds uniformly level in each course. Vertical joints shall be staggered and mortar in head joints shall be ½" thick full joints. Cut all joints flush. Use of broken tile shall be kept to a minimum. Chinks and crevices shall be slushed full with mortar.

Partitions shall be well anchored to intersecting masonry walls 12½" on center vertically with corrugated wall ties or 16d or 20d cut nails imbedded in mortar joints.

Wedge partition tightly at ceiling with skew cut tile corners every third tile. Slush mortar between tile and ceiling.

PYROBAR shall not be chased out more than half its thickness for conduit or other piping and size of such conduit and pipe shall be such that metal lath may be placed flush over the chase and secured in place.

Rough wood door frames shall be anchored to the PYROBAR with 16d cut nails or 5" buck ties, three each side (approximately 12" from top and bottom and at center) laid in the mortar joints. Lintel construction shall be held ⅛" above head of frame and not slushed with mortar.

Steel door frames shall be anchored to the floor and to the PYROBAR with frame ties furnished by door frame manufacturer, minimum three each side (approximately 12" from top and bottom and at center) laid in mortar joints. Space between tile and door frame jamb shall be slushed full with mortar as tile is laid into frame.

OPTIONAL INCLUSIONS

1. Lintels shall be formed as follows:

A. For openings up to 1'-10" with a single gypsum tile providing at least 4" bearing on each side of opening. First course of tile above lintel must be staggered so vertical joint falls at midpoint of opening.

B. For openings over 1'-10" up to 6'-0" with a gypsum tile lintel consisting of two or more full pieces of tile with top and bottom core holes filled with gypsum mortar and reinforced with continuous ⅜" diameter steel rods.

C. For openings greater than 6'-0" with a steel angle or channel of sufficient size to form the lintel. Upstanding legs of angle or channel must be flush with face of gypsum tile and covered with metal lath if lintel is to be plastered.

2. Lightweight Fixtures (shelves, cabinets, chalkboards, etc.) shall be attached to a ½" wood nailer strip or USG No. 8-A, Picture mold which has been secured to PYROBAR wall (see detail). If ½" wood nailer strips are used, these strips shall be nailed to vertical ¾" x 12" x tile width nailing blocks which are nailed to end of tile before setting tile in wall. Additional nails project into head joint from face of these vertical blocks (no detail shown).

3. Medium Weight Fixtures (lavatories, water closets, heavy shelves, etc.) shall be secured to PYROBAR partitions with ⅜" steel bolts through the tile, using 2" steel washers on both sides of tile. Set bolts in place before plastering.

4. Heavy Fixtures shall be supported by a steel angle grillage or commercial heavy fixture hangers built into the PYROBAR partition. (See detail.)

5. Wood Grounds for plastering shall be nailed into tile with 2½" (8d) cut nails at base and around openings to provide a ⅝" total thickness of plaster.

6. Base shall be:

A. USG 2½" Metal Base secured to PYROBAR partition with USG masonry base clip (see detail).

B. Asphalt, rubber or vinyl tile applied with mastic to finished plaster (see detail).

C. Cement or terazzo base applied over metal lath secured to the first course of PYROBAR which has been coated with USG Dampproof coating from rough floor up to height of wet terrazzo (concrete) base. Care should be taken to get thorough application at joint of PYROBAR with rough floor (see detail).

D. Wood base (plain or hollow for conduit) shall be nailed to ½" wood nailers secured to face of PYROBAR with 2½" (8d) cut nails. (See detail.)

SPECIAL CONDITIONS

1. When columns or beams are located in line of partitions so that plane of plaster continues from the PYROBAR across the face of the columns or beams, cover face of columns or beams with 30# asphalt felt or equal membrane and cover this membrane with diamond mesh metal lath. Fasten metal lath to PYROBAR. Mineral wool filler strips shall be placed between ends of PYROBAR and columns (see detail).

2. Where partitions occur beneath constructions, where deflections downward of the construction are possible, provisions must be made at head of partitions for relief of transmitted loads.

3. Install control joints in partition runs exceeding 60'. Maximum spacing between control joints shall not exceed 30' and the maximum distance from control joint to partition termination shall not exceed 30'. (See detail.)

4. Resilient Facings—Where resilient facings of metal lath or gypsum lath are to be used refer to USG AIA 20-B, 20B-2 ROCKLATH* plaster base, metal lath accessories for specifications and details.

5. Where a ceramic tile facing is to be applied to PYROBAR partitions nail metal lath to face of PYROBAR to full height of ceramic tile application for Portland Cement bed. Use USG 66 short or expanded flange casing at juncture of gypsum plaster and ceramic tile (see details).

6. 12" x 24" striplath shall be secured to the tile diagonally over corners of all openings.

7. 3"x 3" cornerite shall be used in all internal plastered corners except where PYROBAR partition abuts load bearing walls or partitions.

COLUMN FIREPROOFING

1. PYROBAR gypsum tile (2" solid) (3" Hollow) shall be laid plumb and true and corners built log cabin fashion with tile interlocking.

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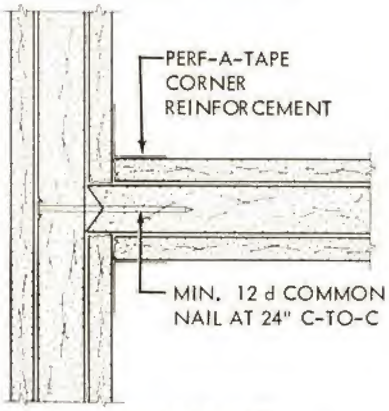
*T. M. Reg. U. S. Pat. Off.

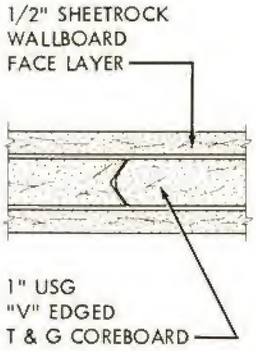
2-INCH SOLID

WALL PLAN SECTIONS

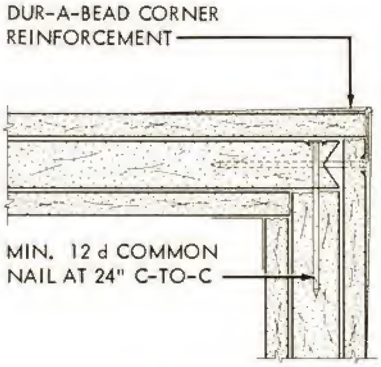
Scale: 3"=1'-0"


PERF-A-TAPE CORNER REINFORCEMENT
MIN. 12 d COMMON NAIL AT 24" C-TO-C

PARTITION INTERSECTION

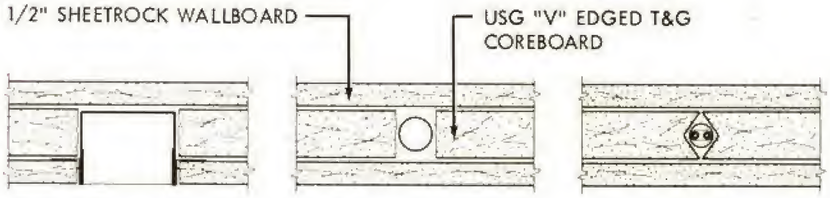

1/2" SHEETROCK WALLBOARD FACE LAYER
1" USG "V" EDGED T & G COREBOARD

COREBOARD EDGE JOINT


DUR-A-BEAD CORNER REINFORCEMENT
MIN. 12 d COMMON NAIL AT 24" C-TO-C

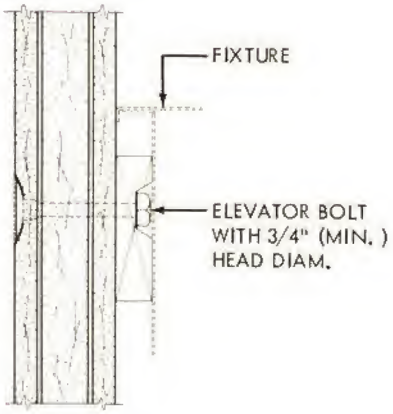
CORNER

ELECTRICAL SERVICE

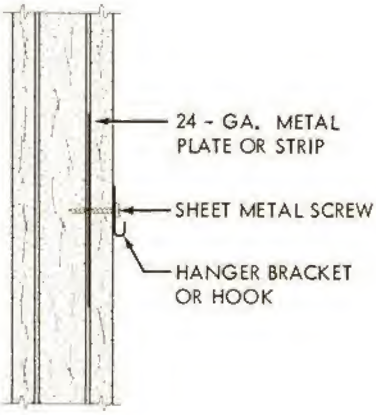


OUTLET BOX **RIGID CONDUIT** **FLEXIBLE CABLE**

FIXTURE ATTACHMENTS



HEAVY

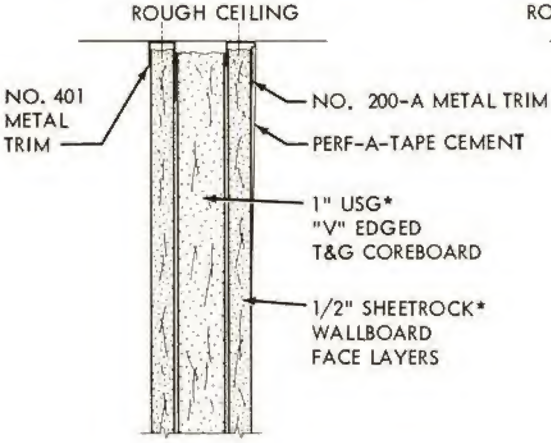


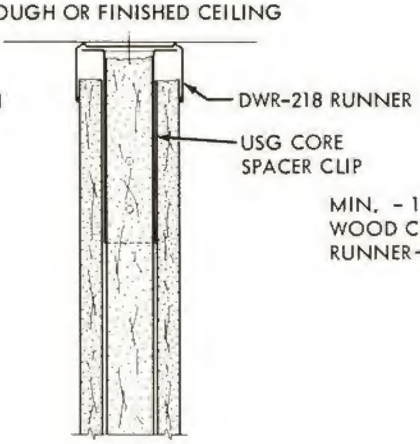
LIGHT

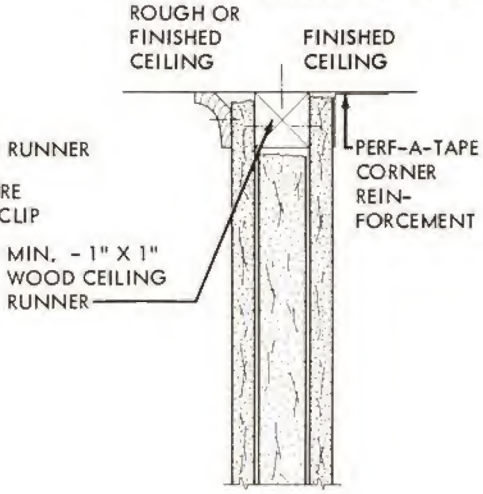
ARCHITECTURAL DETAILS • 2-INCH SOLID

CEILING ATTACHMENTS

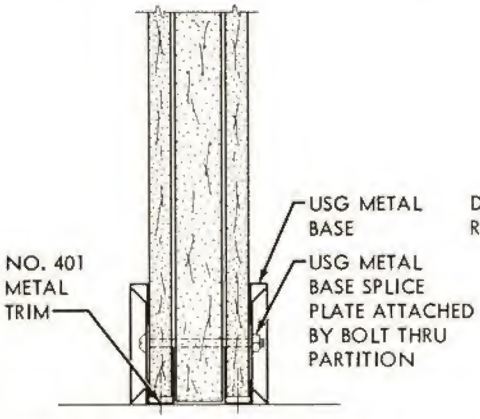
Scale: 3″=1′-0″



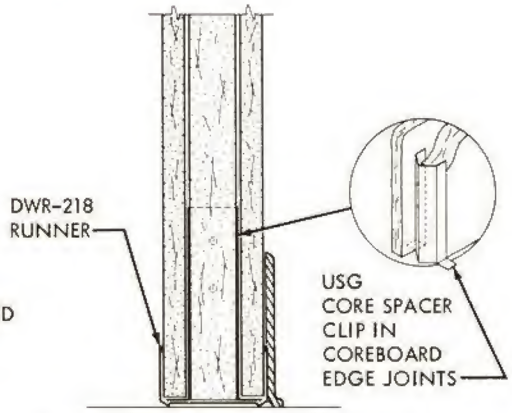



ROUGH OR FINISHED CEILING
FINISHED CEILING
PERF-A-TAPE CORNER REIN-FORCEMENT
MIN. - 1" X 1" WOOD CEILING RUNNER

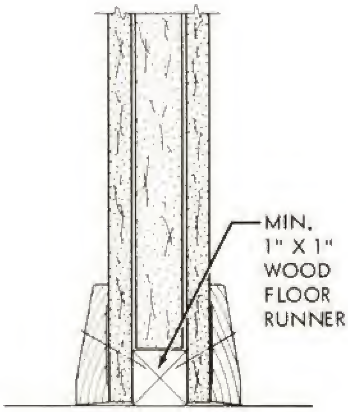
FLOOR ATTACHMENT & BASE



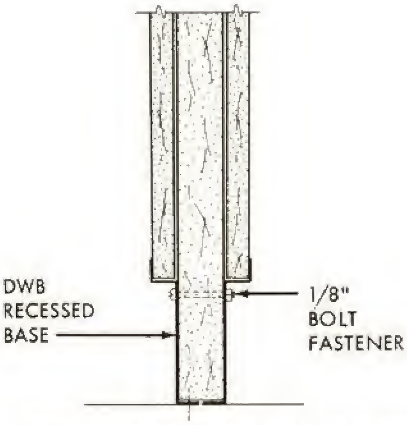
REVEAL METAL BASE



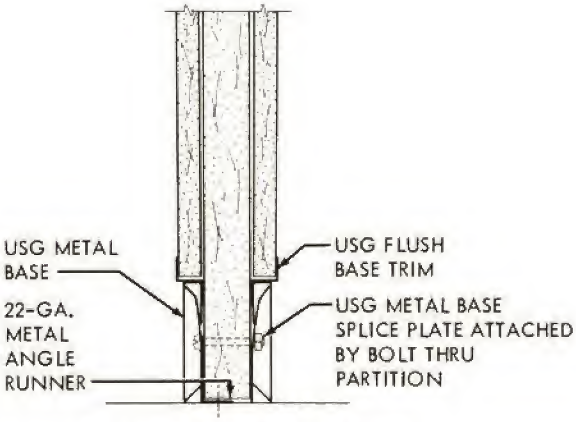
EXPOSED RUNNER **RUBBER OR VINYL BASE**



WOOD BASE



RECESSED METAL BASE

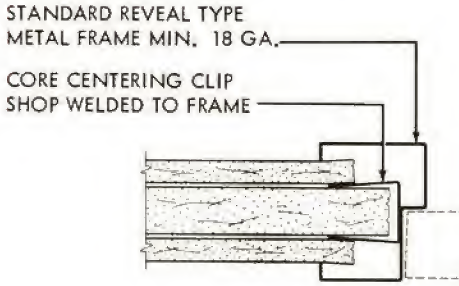

USG METAL BASE
22-GA. METAL ANGLE RUNNER
USG FLUSH BASE TRIM
USG METAL BASE SPLICE PLATE ATTACHED BY BOLT THRU PARTITION

FLUSH METAL BASE

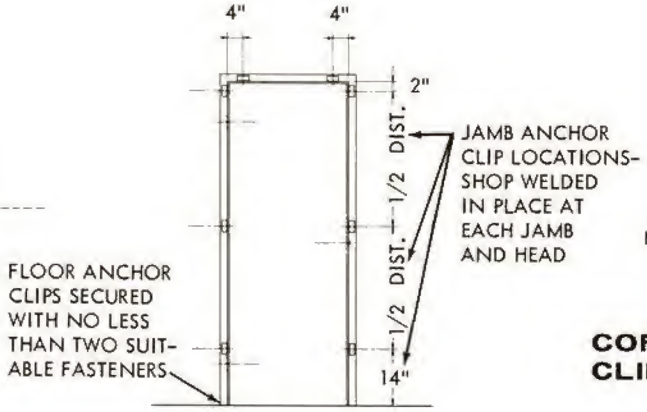
ARCHITECTURAL DETAILS • 2-INCH SOLID

METAL DOOR FRAME

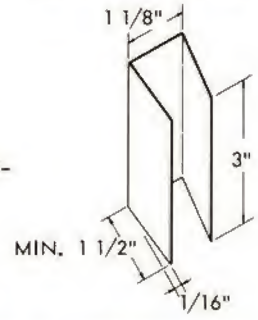
Scale: 3″=1′-0″



JAMB

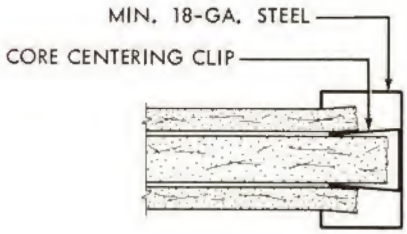


ELEVATION
(CROSS SECTION THRU FRAME)

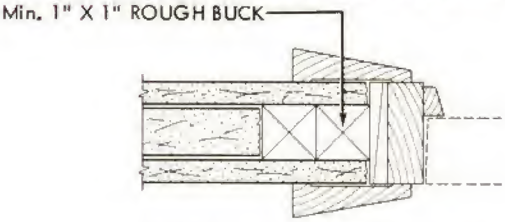


CORE CENTERING CLIP (18-GA. MIN.)

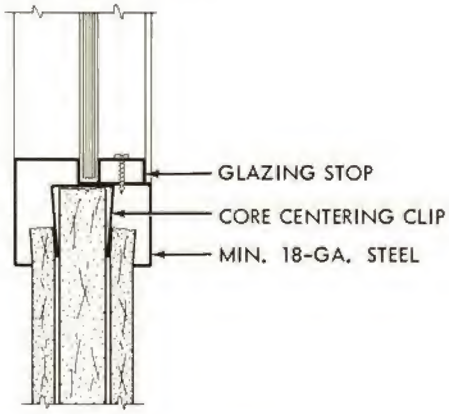
MISCELLANEOUS



METAL PARTITION TERMINAL



WOOD DOOR FRAME

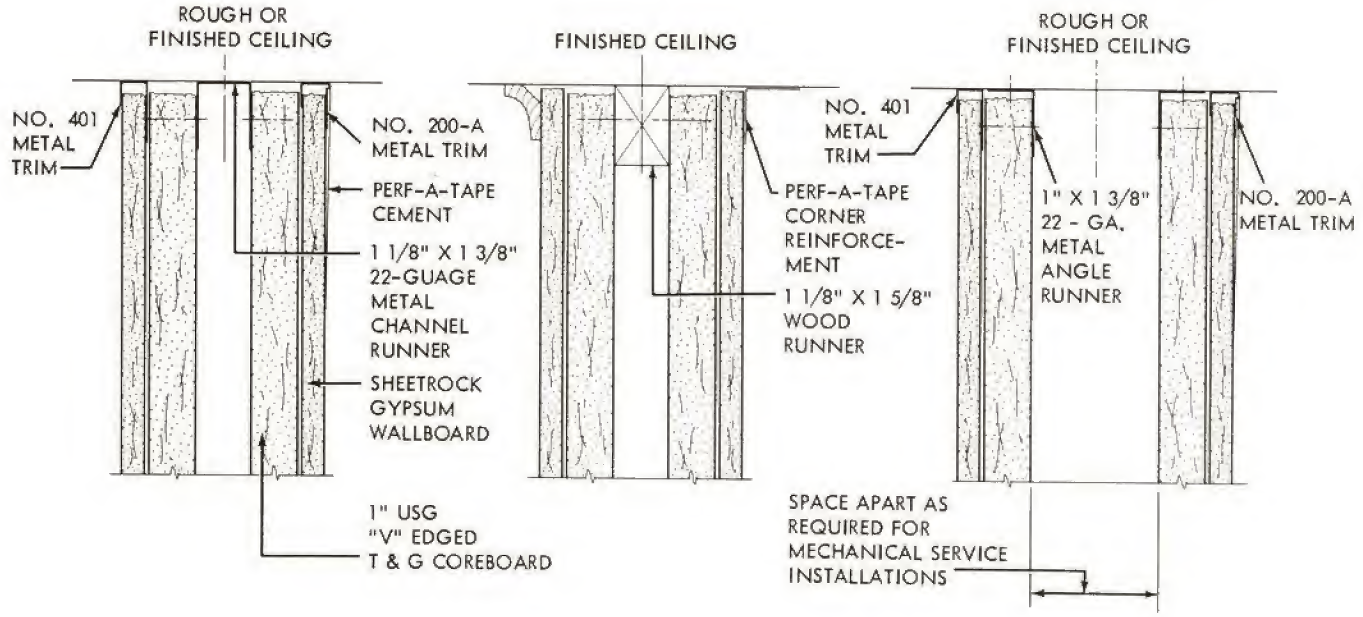


METAL BORROW LIGHT FRAME

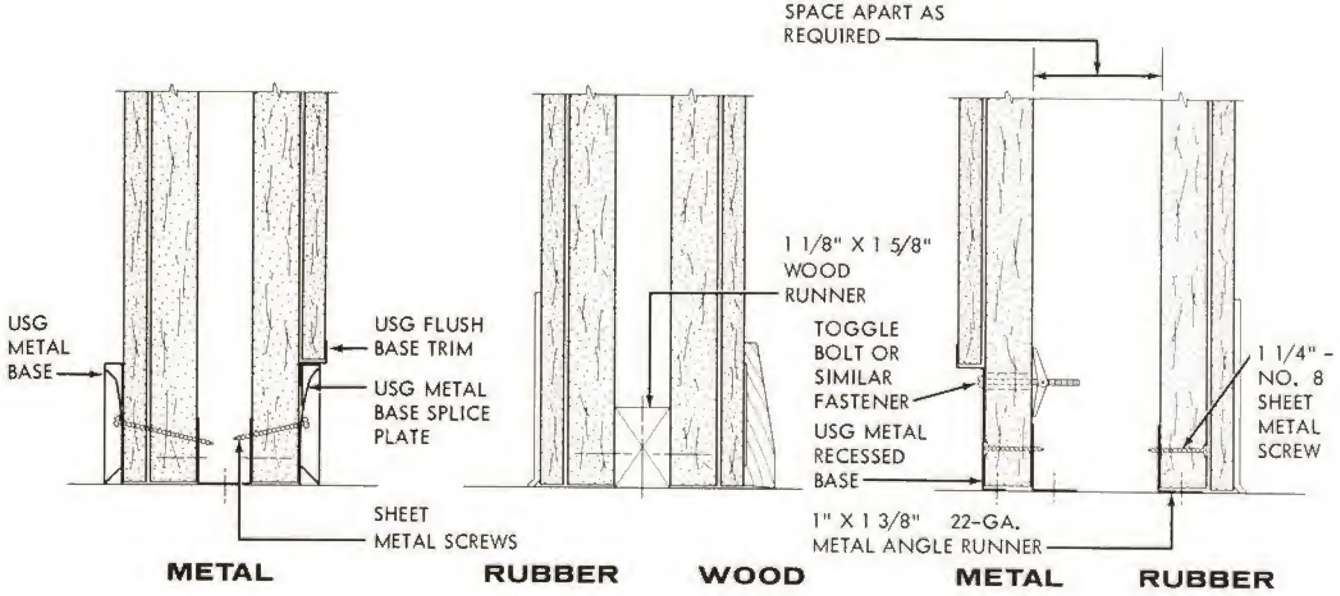
ARCHITECTURAL DETAILS • DOUBLE SOLID

CEILING ATTACHMENTS

Scale: 3″=1′-0″

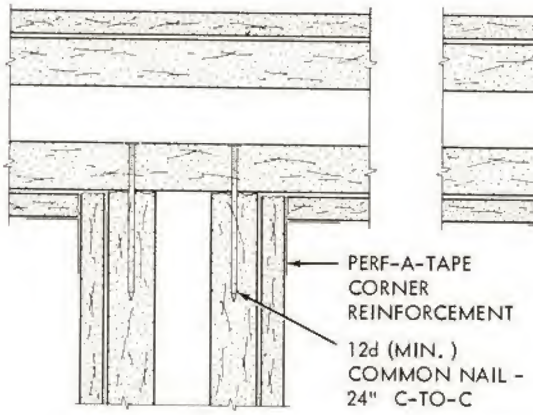

ROUGH OR FINISHED CEILING
NO. 401 METAL TRIM
NO. 200-A METAL TRIM
PERF-A-TAPE CEMENT
1 1/8" X 1 3/8" 22-GUAGE METAL CHANNEL RUNNER
SHEETROCK GYPSUM WALLBOARD
1" USG "V" EDGED T & G COREBOARD
FINISHED CEILING
PERF-A-TAPE CORNER REINFORCE-MENT
1 1/8" X 1 5/8" WOOD RUNNER
ROUGH OR FINISHED CEILING
NO. 401 METAL TRIM
1" X 1 3/8" 22 - GA. METAL ANGLE RUNNER
NO. 200-A METAL TRIM
SPACE APART AS REQUIRED FOR MECHANICAL SERVICE INSTALLATIONS

FLOOR ATTACHMENTS & BASES

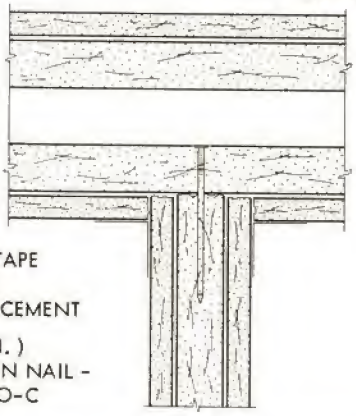

SPACE APART AS REQUIRED
USG METAL BASE
USG FLUSH BASE TRIM
USG METAL BASE SPLICE PLATE
SHEET METAL SCREWS
1 1/8" X 1 5/8" WOOD RUNNER
TOGGLE BOLT OR SIMILAR FASTENER
USG METAL RECESSED BASE
1" X 1 3/8" 22-GA. METAL ANGLE RUNNER
1 1/4" - NO. 8 SHEET METAL SCREW
METAL
RUBBER
WOOD
METAL
RUBBER

INTERSECTING WALLS

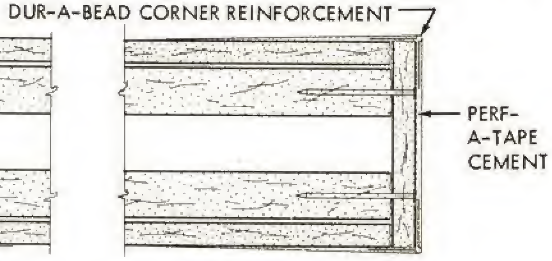
Scale: 3"=1'-0"


PERF-A-TAPE CORNER REINFORCEMENT
12d (MIN.) COMMON NAIL - 24" C-TO-C

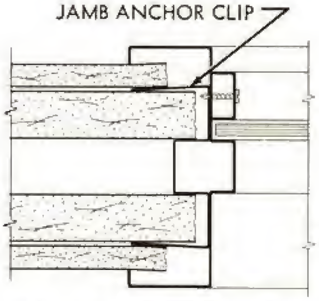
DOUBLE SOLID



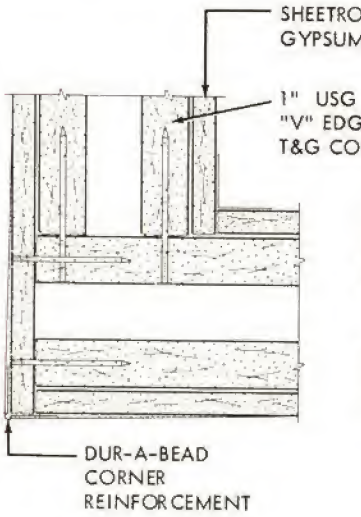
DOUBLE SOLID & 2" SOLID



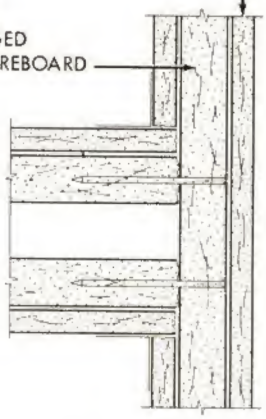
PARTITION TERMINAL



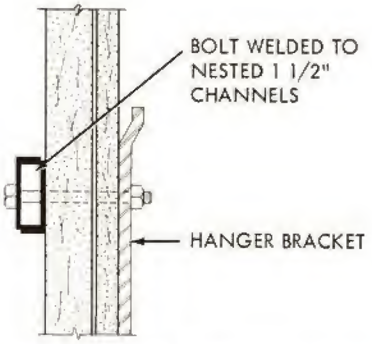
BORROWED LIGHT–JAMB


SHEETROCK GYPSUM WALLBOARD
1" USG "V" EDGED T&G COREBOARD
DUR-A-BEAD CORNER REINFORCEMENT

DOUBLE SOLID

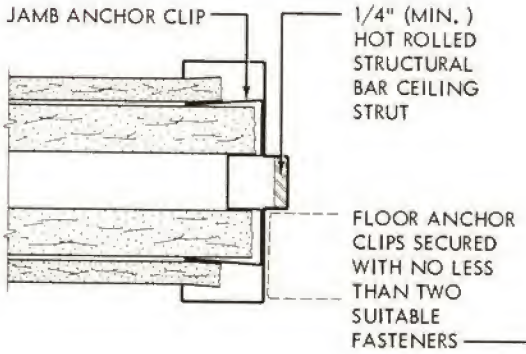


2" SOLID & DOUBLE SOLID

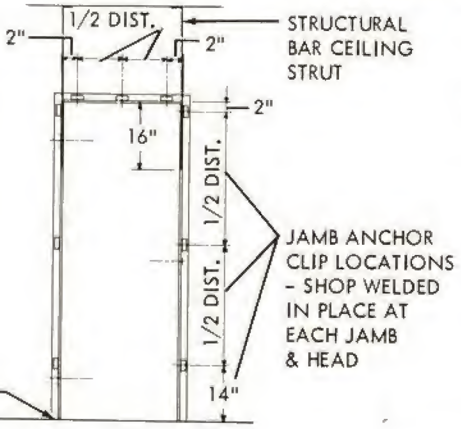


FIXTURE ATTACHMENT

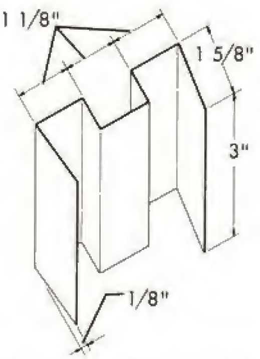
METAL DOOR FRAME


JAMB ANCHOR CLIP
1/4" (MIN.) HOT ROLLED STRUCTURAL BAR CEILING STRUT
FLOOR ANCHOR CLIPS SECURED WITH NO LESS THAN TWO SUITABLE FASTENERS

JAMB


1/2 DIST.
2"
2"
STRUCTURAL BAR CEILING STRUT
2"
16"
1/2 DIST.
1/2 DIST.
JAMB ANCHOR CLIP LOCATIONS - SHOP WELDED IN PLACE AT EACH JAMB & HEAD
14"

ELEVATION
CROSS SECTION THRU FRAME



JAMB ANCHOR CLIP

A.I.A. File 4-L

TECHNICAL INFORMATION

PYROFILL* GYPSUM CONCRETE ROOF DECKS

UNITED STATES GYPSUM

1960

*T.M. Reg. U.S. Pat. Off.

USG UNITED STATES GYPSUM

A.I.A. File 4-L

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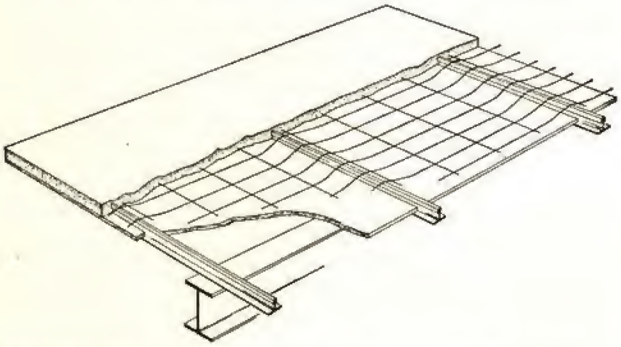
*T.M. Reg. U.S. Pat. Off.

. . . POURED GYPSUM DECK



PYROFILL* roof decks consist of incombustible, reinforced gypsum concrete slabs poured in place over permanent formboards by experienced USG Gypsum Roof Deck Contractors. The selection of formboards offered with PYROFILL decks provide high acoustical, insulating, and light reflecting properties without additional ceiling finish. An all-weather construction, PYROFILL decks have proven their strength and durability during 50 years of acceptance.

GYPSUM DECK

FORMBOARDS FOR REINFORCED PYROFILL GYPSUM CONCRETE

CHARACTERISTICS	SHEETROCK	STANDARD PYROFORM	PYROTONE	USG ACOUSTICAL	USG INSULATION	ASBESTOS CEMENT
Thickness, in.	½	1	1	1	1	¼
Sizes width, in.	32 or 48	24 or 32	24 or 32	12	32 or 48	32
length	As required 12′-0″ max.	As required 8′-0″ max. See Page 7	As required 8′-0″ max. See Page 6	24 in.	As required 12′-0″ max.	48 in.
Weight psf	2.05	1.30	1.30	1.20	1.45	2.44
Thermal Conductance (K value)	1.43	.24	.24	.38	.33	2.70
Noise Reduction Coefficient	—	.75	.80	.65	.35††	—
Light Reflectivity (Unpainted)	66%	50-60%	75%	78%	40%†††	40%
Incombustible	Yes	Yes	Yes	No.†	No.†	Yes
Installation Service	Yes	Yes	Yes	Yes	Yes	Yes

†USG Insulation PYROFILL and USG Acoustical PYROFILL Decks are usually classed as incombustible with a deficiency penalty when combustible formboard is used.

††Mill primed USG Insulation Formboard—25%.

†††Mill primed USG Insulation Formboard—78%.

"USG", "PYROFILL", "PYROFORM" and "SHEETROCK" are registered trademarks owned by United States Gypsum, used by it to distinguish its products. "USG" identifies the particular formboard, "PYROFILL" identifies the particular gypsum concrete, "PYROFORM" and "SHEETROCK" identify the particular formboard manufactured by United States Gypsum Company.

DESCRIPTION

PYROFILL Roof Decks consist of incombustible, reinforced gypsum concrete slabs poured in place over permanent formboards. The selection of formboards offered with PYROFILL decks provide high acoustical, insulating, and light reflecting properties without additional ceiling finish.

FUNCTION AND UTILITY

Lightweight—The weights of Pyrofill deck constructions including sub-purlins are approximately as follows:

Sheetrock Pyrofill	11.5 lb/sq ft
Pyrotone and Pyroform Pyrofill	10.9 lb/sq ft
USG Insulation Pyrofill	11.0 lb/sq ft
USG Acoustical Pyrofill	10.8 lb/sq ft
Asbestos Board Pyrofill	13.1 lb/sq ft

Strong—In tests by nationally recognized laboratories, a continuous 2″ Reinforced Pyrofill slab and permanent formboards over supports spaced 32⅝″ on centers carried a total load equivalent of more than 450 lbs. per sq. ft. when thoroughly wet, and 700 lbs. per sq. ft. when dry.

Incombustible—Underwriters' Laboratories, Inc., Test Report R3796 dated January 31, 1956 shows a poured gypsum concrete deck withstood 82 minutes of fire exposure, with temperatures up to 1700° F., without failure. Sheetrock Pyrofill, Pyroform Pyrofill and Asbestos Board Pyrofill decks will not burn. USG Insulation Pyrofill and USG Acoustical Pyrofill Decks are usually classed as incombustible with a deficiency penalty since combustible formboards are used.

Durable—Gypsum is chemically inert and will not rot, burn or decay. Reinforced Pyrofill slabs have been in use for half a century and are still in excellent condition. Reinforced Pyrofill roof deck constructions are thoroughly proven by the test of time. Alterations can be made freely, as the slab can be cut and patched easily and quickly, with a minimum of expense.

Appearance—The permanent formboards provide a smooth, light colored ceiling of good-looking paneled surfaces. See "Decorating," page 5.

Speed of Erection—No other monolithic type of poured concrete roof deck can be installed faster. Pyrofill sets quickly (within 30 minutes), permitting workmen to work on previously poured sections in pouring new sections. Up to 30,000 sq. ft. of roof area have been poured in one day.

All Weather Construction—These roof decks can be installed during the coldest weather in which men normally work. Sufficient heat within the gypsum is generated to prevent freezing during the set. See "Exposure," "Drying" and "Venting of Enclosed Spaces," Page 5.

Adaptability—Reinforced Pyrofill slabs may be installed on flat, warped, saw tooth, curved or pitched roof framing.

Seismic Loads—Pyrofill roof decks meet requirements for resistance to seismic forces as established by the Uniform Building Code (Pacific Coast Building Officials Conference), California State Division of Architecture, and the building codes of the City of Los Angeles and the County of Los Angeles. Information and design details to meet these requirements are available on request.

Low Cost—The simplicity of design, light weight, and speed of erection combined with its other outstanding qualities of rigidity, fire resistance, and finished undersurface make the overall cost of this construction very economical.

DESIGN

Reinforced PYROFILL slabs (2″ of reinforced Pyrofill poured over permanent formboards) are designed to span continuously over sub-purlins.

Steel Sub-Purlins vary in size, weight and shape and are selected according to required span and loading. They provide anchorage of the deck against uplift, and restrict movement of the deck due to temperature change. Sub-purlins are spaced to accommodate 24″, 32″ or 48″ formboard widths with a slight tolerance for ease of formboard placement. When 48″ wide formboard is used with light sub-purlin sections, supporting steel spacing should not exceed 36″ on center.

Slab Reinforcement for Pyrofill Roof Decks is a 48-1214 galvanized wire mat with 12 gauge wires placed perpendicular to sub-purlins. When bulb tees are placed on 48⅝″ centers over bar joists on 36″ or less centers, the 12 gauge wires run perpendicular to the bar joists.

PYROFILL, a mill mixed gypsum concrete composed of calcined gypsum and wood chips, shavings or fibers, requires the job site addition of water only. It is poured in place over the formboards to a minimum thickness of 2″.

REFERENCE: Complies with ASA—A59.1—1954 and ASTM C317—55.

INSTALLATION

Reinforced Pyrofill roof decks are installed by experienced U.S.G. Gypsum Roof Deck Contractors who are located conveniently in all parts of the U.S.A. This service insures the best in workmanship, quality and safety. Consult your USG representative for contractors serving your area.

FORMBOARDS

SHEETROCK Formboard is a rigid type gypsum board, ½ in. thick by 32 in. wide (or 48 in. wide), and made to specified lengths to fit purlin spacings. Treated to resist mildew effectively where adequate ventilation is provided. REFERENCE: Federal Specification SS-W-51a, Type A, and ASTM C318-55.

PYROTONE Formboard is a rigid, incombustible, insulative, acoustical formboard with a white, textured, plastic finished surface for use where ceilings are to be left exposed. (See page 6 for sizes and detail.)

PYROFORM Mineral Fiber Formboard is a rigid, incombustible, insulative, acoustical formboard. Supplemental tees are required to support exposed end joints when they are not supported by the substructure. (Meets Federal Specification HH-I-564, Class A.) See page 7 for complete information.

USG Insulation Formboard is a rigid type natural color wood fiber insulation board 1 and ¾″ thick, 32 in. wide (or 48 in. wide), and cut to specified lengths to fit purlin spacings. Treated to resist mildew effectively where adequate ventilation is provided.

USG Acoustical Formboard is a rigid type wood fiber insulation board having a slotted or perforated acoustical surface shop painted white. It is 1″ x 12″ x 24″ in size and is treated to resist mildew effectively where adequate ventilation is provided.

NOTE: *USG Acoustical Formboard and Mill Primed USG Insulation Formboard are shop primed white to provide an economical paint base for further decoration necessary to cover possible water staining and surface discoloration. Field painting after the slab is dry should be covered in the Architects' Specification. REFERENCE: Federal Specification LLL-L-32lb.*

Asbestos-cement Formboard is a rigid industrial type asbestos cement board, ¼ in. thick, cut to 32 in. wide by 48 in. long. Supplemental tees are required to support exposed end joints when they are not supported by the sub-structure. REFERENCE: Federal Specification SS-S-283a, Type F or U.

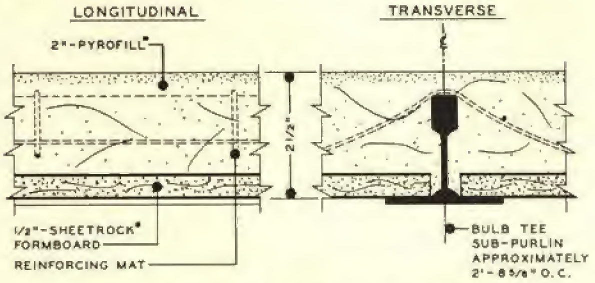
NOTE: Asbestos-cement formboard is not manufactured by U.S.G.

SLAB REINFORCEMENT

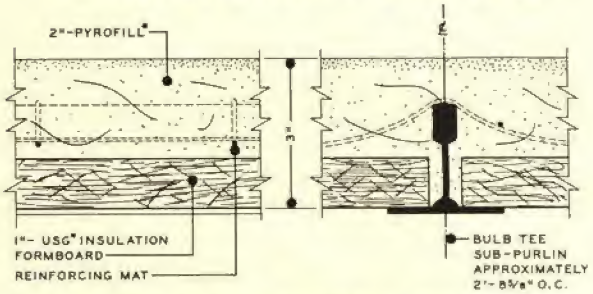
Steel Reinforcing for PYROFILL slabs is a welded type galvanized wire mat consisting of No. 12 gauge longitudinal wires spaced 4 in. on centers and No. 14 gauge transverse wires spaced 8 in. on centers—usually referred to as 48-1214 mat. The effective cross sectional area per foot width of slab (No. 12 gauge wires) is 0.026 sq. in. Other comparable types of galvanized wire reinforcement may be used if their effective cross sectional area is equal to or greater than 48-1214 mat, and if they will afford comparable bond and corrosion resistance.

NOTE: Galvanized reinforcing mats are not manufactured or sold by U.S.G.

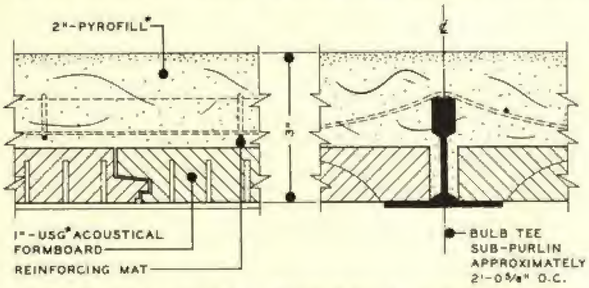
SCALE 3″ = 1′-0″


LONGITUDINAL
TRANSVERSE
2″-PYROFILL*
2 1/2″
1/2″-SHEETROCK* FORMBOARD
REINFORCING MAT
BULB TEE SUB-PURLIN APPROXIMATELY 2′-8 5/8″ O.C.

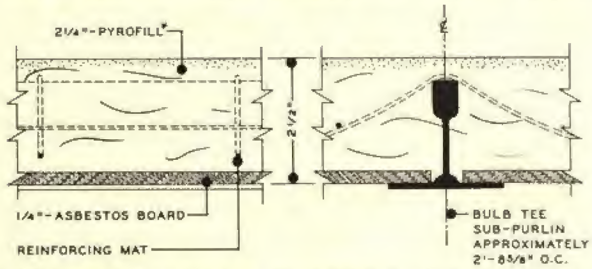
SHEETROCK PYROFILL ROOF DECK


2″-PYROFILL*
3″
1″-USG* INSULATION FORMBOARD
REINFORCING MAT
BULB TEE SUB-PURLIN APPROXIMATELY 2′-8 5/8″ O.C.

USG INSULATION PYROFILL ROOF DECK


2″-PYROFILL*
3″
1″-USG* ACOUSTICAL FORMBOARD
REINFORCING MAT
BULB TEE SUB-PURLIN APPROXIMATELY 2′-0 5/8″ O.C.

USG ACOUSTICAL PYROFILL ROOF DECK



ASBESTOS CEMENT PYROFILL ROOF DECK

ACOUSTICAL AND LIGHT REFLECTING PROPERTIES

Formboard	Thickness	Noise Reduction Coefficient	Light Reflection Coefficient
SHEETROCK	½″	—	66%
PYROFORM	1″	.75	50-60%
Insulation	1″	.35	40%*
Acoustical	1″	.65	78%
Cement-asbestos	¼″	—	40%
PYROTONE	1″	.80	75%

***Mill-primed 78%**

RECOMMENDATIONS AND LIMITATIONS OF USE

Excessive Moisture or Temperature—PYROFILL roof decks are suitable for all types of buildings and occupancy with normal temperature and humidity conditions. Where intermittent very high temperatures occur, it is advisable to use cement-asbestos board PYROFILL roof decks. Where abnormally high humidity conditions prevail, such as in wet process plants, or where unusually high temperatures prevail such as in foundries, over breechings, in furnace rooms, etc., consult your USG representative for recommendations.

Exposure—During application, PYROFILL roof decks withstand the effects of normal rainfall, snow, freezing and thawing; however, they should be covered as soon as practicable. The water-proof (built-up type) roof covering should be applied as soon as the top surface of the slab is reasonably dry; i.e., when there is no visible moisture gloss. For the application of built-up roof covering, we recommend that the first 2 plies of the felt be nailed. We suggest a 5d or 6d square cut nail through a metal roofing cap. See table of nail holding values on page 8.

Drying—PYROFILL roof slabs dry out from the underside (through the formboard). Adequate heat and ventilation below the slab are required to permit the escape of this moisture. In buildings without windows or with fixed windows adequate mechanical (forced) ventilation is required to remove all construction moisture. PYROFILL is not recommended as a fill over concrete slabs, steel decks, and other decks of low permeability. Consult your USG representative if unusual conditions prevail.

Ventilating of Enclosed Spaces—The underside of a PYROFILL Deck should not be enclosed by a ceiling before the deck is dry. The enclosed space should always be vented to the outside. Such venting by small louvers or openings does not appreciably affect attic temperatures. Please refer to *Heating, Ventilating, Air Conditioning Guide,* published annually by the American Society of Heating and Air Conditioning Engineers for complete information on venting of attic spaces (Chapters 10 & 12).

Acids—Acid fumes generally are not harmful to gypsum although they may be harmful to framing materials. If acid fumes are considered a problem, consult your USG representative.

Heavy Loads—Although the reinforced PYROFILL slab will carry loads in excess of 100 lbs. per sq. ft. with adequate factors of safety, the sub-purlins or bar joists govern the safe load limit. All superimposed concentrated loads, such as flag pole bases, water tanks and ventilating fans, must be directly or indirectly supported on steel framing, not on the gypsum slab.

Steep Roofs—PYROFILL roof slabs are designed to receive built-up roof coverings. On steep roofs, where slate, ceramic tile or rigid type shingle roof coverings are required, the use of USG METAL EDGE GYPSUM PLANK is recommended. See page 8 for PYROFILL nail holding data.

Expansion and Contraction—PYROFILL Roof Decks, like all roof decks, are subject to expansion and contraction due to temperature changes. Bulb tees welded to steel framing limit slab movement that would exert itself at right angles to the direction of the bulb tees. The following is suggested as a guide:

1. Provide expansion joints in the deck and the roofing wherever they are provided in the main structure.
2. Long narrow buildings should have expansion joints through the deck and the supporting structure spaced not more than 200 ft. apart.
3. Separate wings of "L," "U" and "T" shaped buildings with expansion joints.
4. A mineral fiber (PYROFORM) filler strip should be installed between all junctures of roof slabs with parapet walls, stacks, etc. See details on pages 11 and 12.

To enable you to resolve specific problems the coefficient of linear expansion of gypsum concrete is .0000085 inch per °F. See *Steel Construction,* Manual of the A.I.S.C., for method of calculating expansion of bodies by heat.

Decorating—PYROFILL Roof Decks do not generally require further decorating, as the formboards provide a presentable undersurface. When decoration is desired, painting should not be done until the slab is thoroughly dry. Before painting, the slab should be checked for dryness throughout its entire thickness. An electric type moisture meter can be used if contacts are driven well into interior of slab. Casein or Resin emulsion paints give best results. Exposed metal, such as sub purlin flanges, should be protected with a suitable metal primer before finish coats are applied.

All finish coats must be treated to effectively resist mildew.

Suspended Ceilings—Suspended ceilings under PYROFILL roof decks should be hung from the structural steel frame. If they are hung from the roof deck, the hangers should be attached to the sub-purlins, never to the gypsum slab alone. When hung from the sub-purlins, the sub-purlins must be capable of supporting the total weight including ceiling with a deflection not to exceed 1/360 of their span. See selection table on page 9 for load values of various sub-purlins.

Uplift—During hurricanes or high winds all roof decks are subject to uplift forces. Therefore, roof decks should be anchored to supports to resist this uplift. In developing adequate resistance, the total dead load of the roof deck can be considered as part of the total resistance. In laboratory tests, PYROFILL roof decks, using steel rails or bulb tee sub-purlins welded to the steel framing, have an average uplift resistance equivalent to more than 125 lbs. per sq. ft. Slabs with standard tee or flanged channel (fence post sections) sub-purlins and slabs over bar-joist should have supplemental anchorage to develop the required uplift resistance.

REFERENCE: Armour Research Foundation Test M1068.

PYROFILL
GYPSUM ROOF DECKS

DESCRIPTION PYROTONE FORMBOARD

PYROTONE Mineral Fiber Formboard was designed specifically as a formboard for PYROFILL Decks, and provides the strength and rigidity required for this use. PYROTONE Formboard, together with PYROFILL, the original gypsum concrete, provides a sturdy, incombustible roof deck with high insulation and acoustical values.

PYROTONE Formboard is for use where the ceiling is to be exposed and where acoustical value and high light reflectivity are required.

FUNCTION AND UTILITY

Finished Acoustical Ceiling—PYROTONE FORMBOARD has a rugged, textured, plastic surface for lasting beauty, easy maintenance and high light reflectance without painting. Light reflection 0.75.

Incombustible—PYROTONE has been tested by Underwriters' Laboratories, Inc. in accordance with ASTM E84-50T and is listed with a 0-5 flame spread classification. PYROTONE also qualifies under Class A (incombustible) of Federal Specification SS-A-118b.

Insulative—PYROTONE excels in thermal efficiency. Average thermal conductance ("C" value) at a nominal 1" thickness is .24 btu-sq. ft./°F. See table at right for U-factor values.

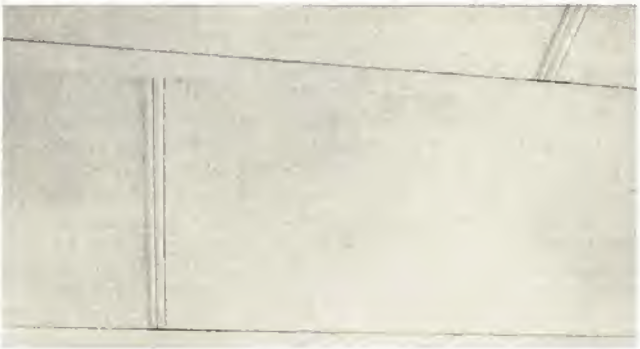
Sizes—PYROTONE, in 1" thickness is available in the following widths and lengths to fit job requirements:

32 in. wide, 48 in. long
24 in. wide, 36 in. through 96 in. long, in ¼ in. increments.

Maintenance—The surface of PYROTONE may be cleaned by wiping with a soft sponge dipped in a mild solution of a household detergent similar to Tide.

LIMITATIONS OF USE

PYROTONE Mineral Fiber Formboard should always be stored in a dry place. The normal moisture from a PYROFILL slab has no effect on the performance of PYROTONE. Soaking of the formboard prior to the pouring of the slab can result in excessive deflection. The roof covering should be applied as soon as possible after erection to protect the construction from precipitation.

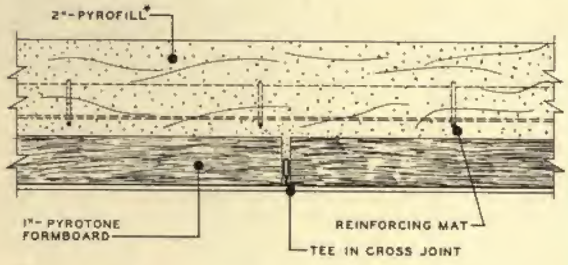


REVISION

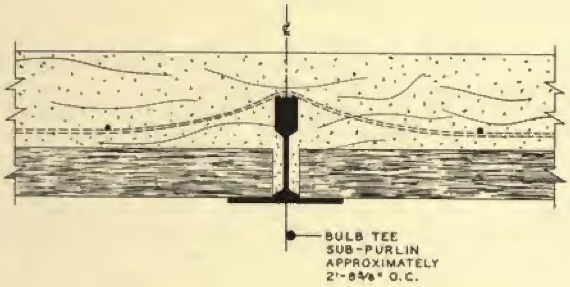
Incombustible—PYROTONE has been tested by Underwriters' Laboratories, Inc. in accordance with ASTM E84-50T and is listed with a 20-25 flame spread classification. PYROTONE also qualifies under Class A (incombustible) of Federal Specification SS-A-118b.

Incombustible—PYROFORM has been tested by Underwriters' Laboratories, Inc. in accordance with ASTM E84-50T and is listed with a 20-25 flame spread classification. PYROFORM also qualifies under Class A (incombustible) of Federal Specification SS-A-118b.

PYROTONE PYROFILL ROOF DECK



LONGITUDINAL



TRANSVERSE

PYROTONE SOUND ABSORPTION COEFFICIENTS
(Official AMA Laboratories Test No. A-59-14.)

Type	Thickness	Mounting	Coefficients						NRC
			125	250	500	1000	2000	4000	
Membrane Faced	1"	#4	.16	.40	.90	.99	.87	.66	.80

THERMAL INSULATION VALUES: PYROTONE-PYROFILL ROOF DECKS
(Including roofing—supporting steel not included)

Description of Construction	U Factor
Exposed underside, no added insulation	.16
Exposed underside, plus 1" roof insulation	.11
Vented air space and ¾" plaster ceiling beneath, no added insulation	.13

DESCRIPTION PYROFORM FORMBOARD

PYROFORM Mineral Fiber Formboard was designed specifically as a formboard for PYROFILL Decks, and provides the strength and rigidity required for this use. PYROFORM Formboard, together with PYROFILL, the original gypsum concrete, provides a sturdy, incombustible roof deck with high insulation and acoustical values.

PYROFORM is available in these styles:

Economy—for use where formboard will not be exposed.

Standard—with membrane, for use where acoustical value and medium light reflectivity is desired.

Caution: The surface appearance of standard PYROFORM may not be acceptable on low ceilings when a finished surface is required.

FUNCTION AND UTILITY

Acoustical Ceiling—Standard PYROFORM may be left exposed as an acoustical ceiling with high sound absorption. See Table at right.

Paintable—Meets requirements of Federal Specifications SS-A-118b. It may be decorated by spray paint without appreciable loss in acoustical absorption. The deck should be thoroughly dry before painting. See "DECORATION" on Page 5.

Incombustible—PYROFORM has been tested by Underwriters' Laboratories, Inc. in accordance with ASTM E84-50T and is listed with a 0-5 flame spread classification. PYROFORM also qualifies under Class A (incombustible) of Federal Specification SS-A-118b.

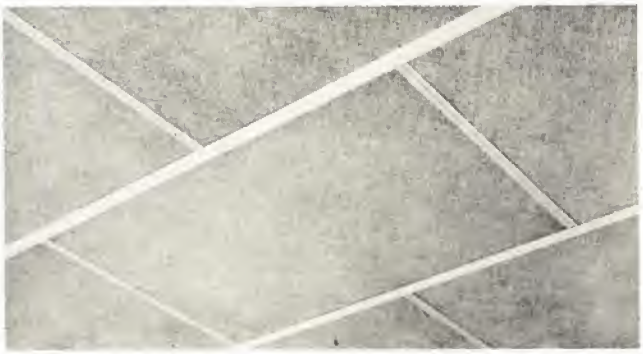
Insulative—PYROFORM excels in thermal efficiency. Average thermal conductance ("C" value) at a nominal 1" thickness is .24 btu/sq. ft./°F. See table at right for U-factor values.

Sizes—PYROFORM, in 1", 1¼" and 1½" thicknesses, is available in the following widths and lengths to fit job requirements:

32 in. wide, 48 in. long
32 in. wide, 42 in. through 47¾ in. long, in ¼ in. increments.
24 in. wide, 36 in. through 96 in. long, in ¼ in. increments.

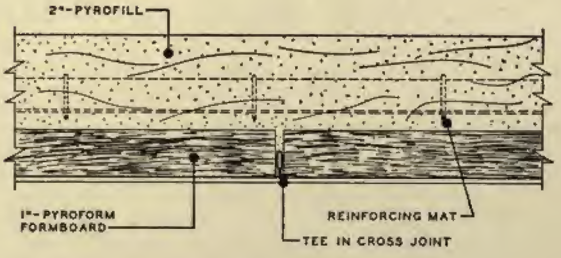
LIMITATIONS OF USE

PYROFORM Mineral Fiber Formboard should always be stored in a dry place. The normal moisture from a PYROFILL slab has no effect on the performance of PYROFORM. Soaking of the formboard prior to the pouring of the slab can result in excessive deflection. The roof covering should be applied as soon as possible after erection to protect the construction from precipitation. Discoloration or staining of PYROFORM may occur if subjected to prolonged exposure to moisture. If staining will be objectionable, the PYROFORM may be painted. See "DECORATING" on page 5.

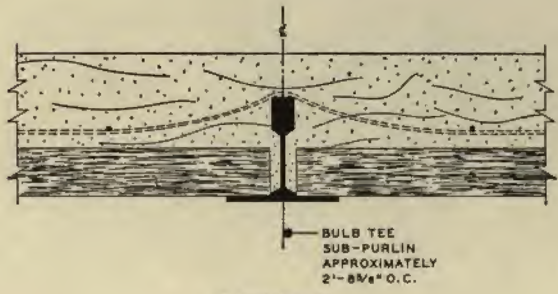


SCALE 3" = 1'-0"

PYROFORM PYROFILL ROOF DECK



LONGITUDINAL



TRANSVERSE

PYROFORM SOUND ABSORPTION COEFFICIENTS
(Official AMA Laboratories Test No. A 55-53)

Type	Thickness	Mounting	Coefficients						NRC
			125	250	500	1000	2000	4000	
Membrane Faced	1"	#4	.08	.36	.84	.90	.93	.91	.75

THERMAL INSULATION VALUES: PYROFORM-PYROFILL ROOF DECKS
(Including roofing—supporting steel not included)

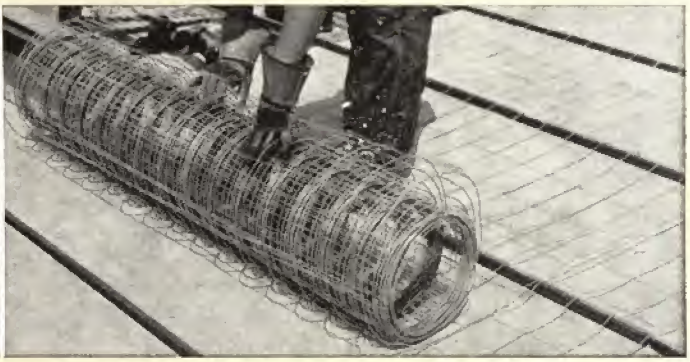
Description of Construction	U Factor
Exposed underside, no added insulation	.16
Exposed underside, plus 1" roof insulation	.11
Vented air space and ¾" plaster ceiling beneath, no added insulation	.13

SLAB WEIGHTS AND THERMAL INSULATION VALUES

	Approx. Slab Weight per Square Feet	(Btu per sq. ft., per hr., per deg. F. diff. in temperature) "U" Factor for complete roof slab including built-up roof covering (supporting steel not included)					
		No Insulation		½" Insulation		1" Insulation	
		Summer	Winter	Summer	Winter	Summer	Winter
2½" SHEETROCK PYROFILL ROOF SLAB 2" PYROFILL Over ½" SHEETROCK	10.7	0.32	0.36	0.22	0.24	0.17	0.18
3" PYROTONE or PYROFORM PYROFILL ROOF SLAB 2" PYROFILL Over 1" PYROTONE or PYROFORM	10.0	0.15	0.16	0.12	0.13	0.11	0.11
3" U.S.G. INSULATION PYROFILL ROOF SLAB 2" PYROFILL Over 1" U.S.G. INSULATION FORMBOARD	10.1	0.18	0.20	0.15	0.15	0.12	0.12
3" U.S.G. ACOUSTICAL PYROFILL ROOF SLAB 2" PYROFILL Over 1" ACOUSTICAL FORMBOARD	9.9	0.18	0.20	0.15	0.16	0.12	0.13
2½" Asbestos Board PYROFILL ROOF SLAB 2¼" PYROFILL Over ¼" Asbestos Board	12.2	0.34	0.39	0.23	0.25	0.18	0.19

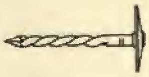
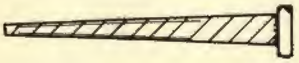
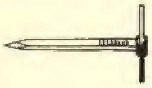
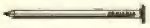
NOTES: 1. For total weight of roof deck add weight of sub-purlins to the approx. slab weights shown above.

2. The component materials weigh approximately: PYROFILL 52 lbs. cu. ft. ½" SHEETROCK 2.05 lbs. sq. ft. PYROFORM 1.3 lbs. sq. ft. 1" U. S. G. Insulation Formboard 1.45 lbs. per sq. ft. (1" U. S. G. ACOUSTICAL FORMBOARD 1.2 lbs. sq. ft.) ¼" Asbestos board 2.44 lbs. per sq. ft.



NAIL HOLDING POWER

Resistance to direct pull in pounds per nail for penetration shown

Type of nail		Screw-Tite Squarehed**	La Belle Square Cut Nails (Wheeling)		Gypsum Deck Nails*		Wire Nails
			6-Penny Common	6-Penny Cornice	1½"	1¾"	7-Penny Common
Finish		Plain	Plain or Galv.	Plain or Galv.	Plain	Plain	Plain
Head dimension		1⁵⁄₁₆" square	.27"x.21"	.34"x.28"	dia. .975"	dia. .975"	¼" Round
Shank at head		.125"	.19"x.114"	.23"x.14"	.152"x.103"	.197"x.125"	11.5 Ga.
Shank at point		.125"	.10"x.07"	.13"x.08"	.092"x.071"	.125"x.115"	11.5 Ga.
Details and Lengths							
		1¾"	2"	2"			2¼"
Penetration		1½"	1.75"	1.75"	1.25"	1.50"	2.0"
Holding power	Wet	46.5	26.5	34.0	14.5	28.0	—
in PYROFILL	Dry	62.0	226.0	180.0	116.0	181.0	28.0

NOTES: 1. Values are from tests conducted at USG Research Laboratories and provide relatively holding power for the type shown.

2. Nails were driven by hand with a hammer and withdrawn immediately by means of a weighted lever arm.

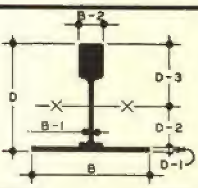
3. The dry density of the PYROFILL was approximately 52 pounds per cu. ft.

4. Other nails of the same shank size and penetration should give equal holding power.

* Manufactured by Crescent Brass & Pin Co., Detroit.

** Manufactured by Independent Nail & Packing Co., Bridgewater, Mass.

SUB-PURLIN PROPERTIES AND DIMENSIONS

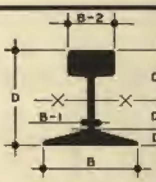


BULB TEE

TYPE	Wt. Lbs. Ft.	I in 4	S in 3	B inches	B¹ inches	B² inches	D inches	D¹ in.	D² in.	D³ inches
1480 Bulb. T. (B)	1.55	0.146	0.173	1.5000	0.100	0.4375	1.5000	0.100	0.558	0.8420
3158 Bulb. T. (W)	1.50	0.160	0.161	1.4375	0.109+	0.3125	1.6875	0.109	0.582	0.9965
158 Bulb. T. (I)	1.50	0.162	0.165	1.5625	0.109+	0.3750	1.6250	0.109	0.532	0.9840
1680 Bulb. T. (B)	2.00	0.251	0.261	1.6250	0.120	0.5000	1.7500	0.120	0.650	0.9800
168 Bulb. T. (I)	2.00	0.247	0.240	1.6250	0.125	0.4370	1.7500	0.132	0.590	1.0280
3168 Bulb. T. (W)	2.00	0.247	0.240	1.6250	0.125	0.4375	1.7500	0.132	0.590	1.0280
3178 Bulb. T. (W)	2.47	0.397	0.324	2.0000	0.141	0.5000	2.0000	0.141	0.635	1.2240
1780 Bulb. T. (B)	2.40	0.348	0.332	1.8750	0.125	0.5625	1.8750	0.125	0.701	1.0490
178 Bulb. T. (I)	2.50	0.364	0.340	1.9000	0.140	0.5620	1.8750	0.140	0.665	1.0700
200 Bulb. T. (I)	3.00	0.503	0.460	2.0630	0.140	0.6560	2.0000	0.140	0.768	1.0920
2025 Bulb. T. (B)	3.00	0.512	0.464	2.2500	0.125	0.6875	2.0000	0.125	0.897	1.1030
3218 Bulb. T. (W)	3.01	0.561	0.472	2.0625	0.140	0.5940	2.1250	0.140	0.795	1.1900
218 Bulb. T. (I)	3.00	0.598	0.520	2.1250	0.125	0.6875	2.1250	0.140	0.975	1.1500
2180 Bulb. T. (B)	3.05	0.608	0.520	2.2500	0.125	0.7500	2.1250	0.125	0.827	1.1730
214 Bulb. T. (B)	3.20	0.671	0.494	2.3750	0.141	0.6250	2.2500	0.109	0.783	1.3580
2140 Bulb. T. (B)	3.65	0.852	0.738	2.1250	0.125	0.8750	2.3125	0.125	1.032	1.5600
3228 Bulb. T. (W)	3.65	0.852	0.738	2.0000	0.125	0.8750	2.3125	0.125	1.032	1.1560
3258 Bulb. T. (W)	4.67	1.370	1.050	2.2500	0.141	0.9375	2.6250	0.141	1.172	1.3125

(I) Inland Steel Company—30 W. Monroe St., Chicago 3, Ill.
(B) Buffalo Steel Corp.—Tonawanda, N. Y.
(W) West Virginia Steel & Mfg. Co., Huntington, W. Va.

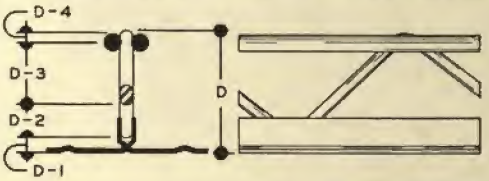
Note: All properties shown are taken from data furnished by manufacturers indicated above.



A.S.C.E..RAIL

TYPE	Wt. Ft.	I in. 4	S in. 3	B Inches	B¹ In.	B² Inches	D Inches	D¹ Inches	D² Inches	D³ Inches
12 Lbs. PerYd. (W)	4.00	0 66	0.63	2.0000	—	1.0000	2.0000	0.3438	0.6162	1.0400
16 Lbs. PerYd.(W)(B)	5.33	1.24	1.01	2.3750	—	1.1718	2.3750	0.3750	0.7720	1.2280
20 Lbs. PerYd.(W)(B)	6.67	1.94	1.43	2.6250	—	1.3437	2.6250	0.4375	0.8305	1.3570
25 Lbs. PerYd. (W)	8.33	2.50	1.77	2.7500	—	1.5000	2.7500	0.4844	0.8532	1.4124

TRUSSED TEE (E)



SIZE	I in.⁴	S BTM	S TOP	D¹	D³	D⁴	D⁴	2 Wires in.²	1 Wire in.²	2 Angles in.²
5-9-16 D=1¾"	.1123	.1919	.1057	.1694	.4157	1.0614	.1035	.0672	.0173	.1718
4-5-16 D=2"	.1860	.3054	.1454	.1307	.4779	1.2787	.1127	.0797	.0336	.2135
4-5-16 D=2½"	.3025	.4062	.1841	.1307	.6139	1.6427	.1127	.0797	.0336	.2135
1-5-16 D=2"	.2433	.3155	.2238	.1307	.6406	1.0872	.1415	.1258	.0336	.2135
1-5-16 D=2½"	.3999	.4180	.2853	.1307	.8260	1.4018	.1415	.1258	.0336	.2135
0-5-14 D=2"	.2861	.3833	.2601	.1409	.6057	1.1001	.1533	.1476	.0336	.2681
0-5-14 D=2½"	.4723	.5111	.3320	.1409	.7832	1.4226	.1533	.1476	.0336	.2681

(E) Edge Steel Products, Inc.—Olathe, Kansas

SUB-PURLINS FOR 2-INCH PYROFILL SLABS OVER FORMBOARDS

VALUES SHOWN ARE BASED ON properties determined by each sub-purlin manufacturer. Sub-purlins Spaced 2'8⅝" on Centers, fs @ 20,000 psi. M—1/10 WL except as noted
Exceptions to spacing and slab thickness are noted in the table.

SUB-PURLINS				SAFE TOTAL LOAD in pounds per sq. ft. uniformly distributed for spans of 3'0" to 12'0" in increments of 6 inches																			Maximum Eave Overhang (See Note 10)
TYPE	S in³	Weight Pounds Lin. Ft.	Weight Pounds Sq. Ft.	3'0"	3'6"	4'0"	4'6"	5'0"	5'6"	6'0"	6'6"	7'0"	7'6"	8'0"	8'6"	9'0"	9'6"	10'0"	10'6"	11'0"	11'6"	12'0"	
1480 Bulb-T (B)	.173	1.55	0.57	117	86	66	52	42	35														2'1"
3158-X Bulb-T (W)	.161	1.45	0.53	110	81	62	49	39	33														2'1"
158 Bulb-T (I)	.165	1.50	0.54	112	83	63	50	40	33														2'1"
168 Bulb-T (I)	.240	2.00	0.74		120	92	73	59	49	41	35	30											2'8"
3168 Bulb-T (W)	.240	2.00	0.74		120	92	73	59	49	41	35	30											2'7"
1680 Bulb-T (B)	.261	2.00	0.74			100	79	64	53	44	37	33											2'8"
3178 Bulb-T (W)	.324	2.47	0.91			124	98	79	68	55	47	41	35	3									2'11"
1780 Bulb-T (B)	.332	2.40	0.88			127	100	81	67	56	48	41	36	31									3'0"
178 Bulb-T (I)	.340	2.50	0.92			130	103	83	69	58	49	43	37	33									3'0"
200 Bulb-T (I)	.460	3.00	1.10				139	113	93	78	67	58	50	44	39	35	31						3'6"
2025 Bulb-T (B)	.464	3.00	1.10					114	94	79	67	58	51	44	39	35	31						3 6"
3218 Bulb-T (W)	.472	3.01	1.11					116	96	80	68	59	51	45	40	36	32						3'7"
214 Bulb-T (B)	.494	3.20	1.18					121	100	84	71	61	53	47	42	37	33	31					3'9"
2180 Bulb-T (B)	.520	3.05	1.12					127	104	88	75	64	56	49	43	39	35	32					3'9"
218 Bulb-T (I)	.520	3.00	1.10						105	89	75	65	57	50	44	39	35	32					3'8"
12-lb. Rail (W)	.630	4.00	1.47						128	107	91	79	69	59	53	*48	*42	*38	*34	*31			4'2"
2140 Bulb-T (B)	.738	3.65	1.33	Spacing 2'9"							101	92	80	70	63	56	50	45	41	37	34	31	4'5"
3228 Bulb-T (W)	.738	3.65	1.33	Spacing 2'9"							106	91	80	70	62	55	50	45	41	37	34	31	4'5"
16-lb. Rail (W) (B)	1.010	5.33	1.94	Spacing 2'9"								125	109	96	85	75	68	61	*55	*49	*45	*42	5'2"
3258 Bulb-T (W)	1.050	4.67	1.69	Min. Thickness = 3" Total—Spacing 2'9"								130	113	99	88	78	71	64	58	53	44	44	5'4"
20-lb. Rail (W) (B)	1.430	6.67	2.42	Min. Thickness = 3" Total—Spacing 2'9"										135	120	107	96	87	79	72	65	58	6'2"
25-lb. Rail (W)	1.770	8.33	3.03	Min. Thickness = 3¼" Total—Spacing 2'9"												132	119	107	97	89	81	75	6'11"

Notes: 1. Loads to left of heavy line have deflections less than 1/360 of span—To Right over 1/360 but less than 1/240 of span. 2. Loads marked * limited by deflection—deflection based on semi continuous spans or $D = \frac{006884wl^4}{EI}$

3. To determine total safe load for Bending Moment of ⅛ WL use 80% of the tabulated load. 4. To determine total safe load for a maximum fiber stress of 18,000 psi use 90% of tabulated load. 5. For suspended ceilings use loads shown to the left of the heavy line; or 75% of loads shown to right of the heavy line can generally be safely used. 6. The most economical spans are from 6'0" to 8'0"—Values for other sub-purlin spacings can be determined by direct ratio. 7. (I)Inland Steel Co. (B) Buffalo Steel Corp. (W) West Virginia Steel & Mfg. Co. 8. We do not recommend using design loads less than 35 pounds per sq. ft. These are indicated by light type. 9. For values of Acoustical slabs with 24⅝" spacing multiply values shown by 1.327. 10. Values shown are for a total load of 45 pounds per sq. ft. Bending moment "M" = ½ WL. Spaced as indicated.

VALUES SHOWN BELOW are on the basis of the Tee, Mesh, and Gypsum acting as a composite section; from data furnished by Edge Steel Products, Inc.

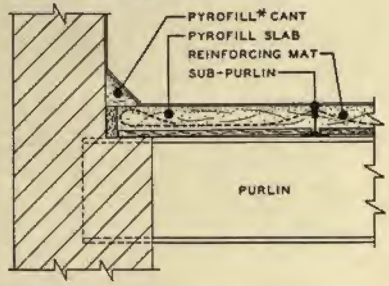
TRUSSED TEES		SAFE TOTAL LOAD in pounds per sq. ft. deflection less than 1/360 of span.*														Maximum Eaves Overhang
Type	Weight Pounds Lin. Ft.	3'0"	3'6"	4'0"	4'6"	5'0"	5'6"	6'0"	6'6"	7'0"	7'6"	8'0"	8'6"	9'0"	9'6"	
5-9-16 D=1¾"	.90		148	113	89	73	60									1'8"
4-5-16 D=2"	1.16					100	82	69	59	51						1'9"
4-5-16 D=2½"	1.16					127	105	88	75	65						1'9"
1-5-16 D=2"	1.32								74	64	56	49				2'0"
1-5-16 D=2½"	1.32								88	76	66	58				2'0"
0-5-14 D=2"	1.57										72	63	56	50	45	2'3"
0-5-14 D=2½"	1.57										80	70	62	56	50	2'3"

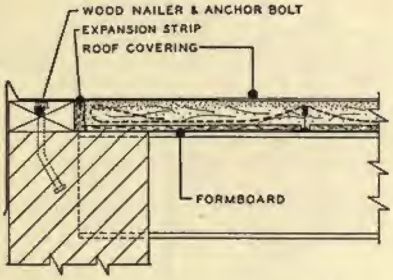
Safe load tables are based on uniformly distributed loads on 3 continuous spans and with Sub-Purlins spaced 32¾" O.C.
For Sub-Purlins spaced 24¾" O.C. multiply value by 1.325. The 2½" Trussed-Tee is recommended when formboard of 1" thickness is used.
*For tables showing deflections less than 1/240 consult Edge Steel Products, Inc. Technical Folder.

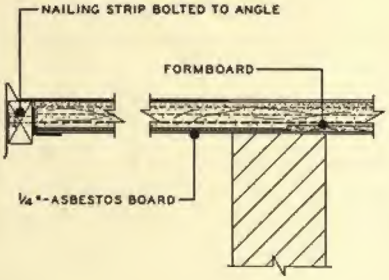
APPLICATION OVER BEAMS AND BAR JOISTS

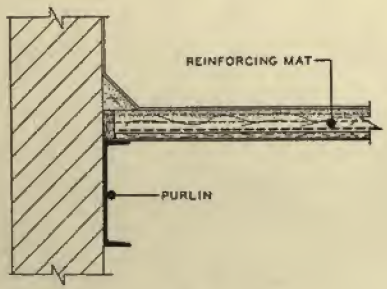
details **Scale ¾" = 1'-0"**

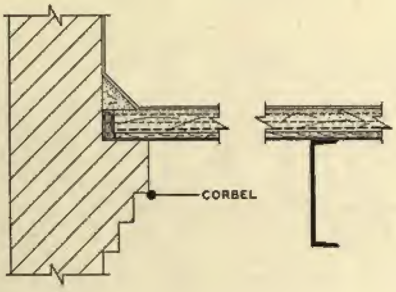
WALL DETAILS

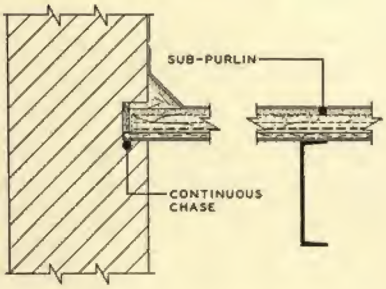




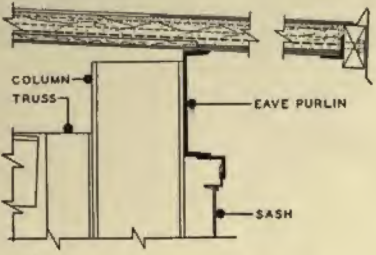


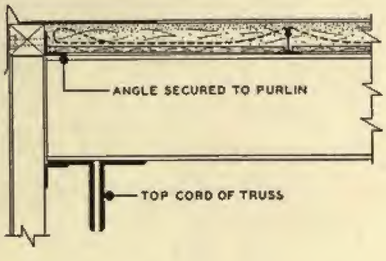


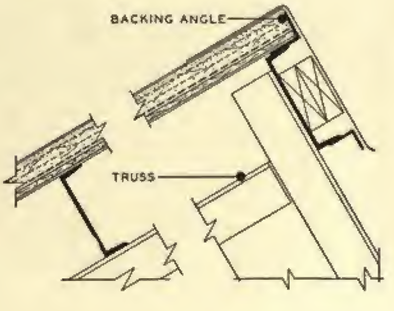




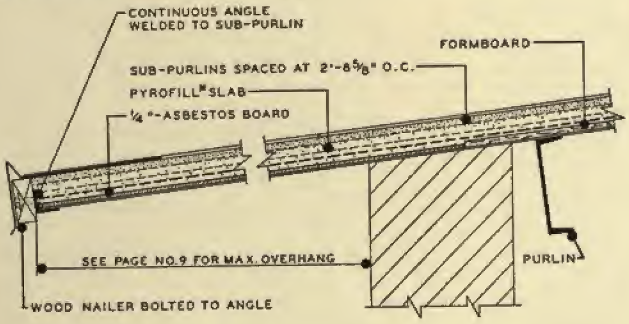
EAVES

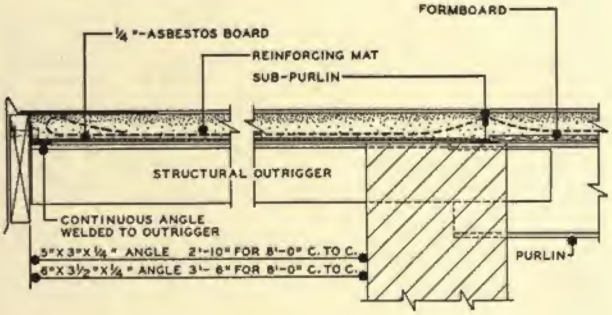






EAVE & GABLE OVERHANG
(OVERHANG BASED ON 45#/□' TOTAL LOAD)


CONTINUOUS ANGLE WELDED TO SUB-PURLIN
FORMBOARD
SUB-PURLINS SPACED AT 2'-8⅝" O.C.
PYROFILL* SLAB
¼"-ASBESTOS BOARD
SEE PAGE NO.9 FOR MAX. OVERHANG
PURLIN
WOOD NAILER BOLTED TO ANGLE


FORMBOARD
¼"-ASBESTOS BOARD
REINFORCING MAT
SUB-PURLIN
STRUCTURAL OUTRIGGER
CONTINUOUS ANGLE WELDED TO OUTRIGGER
5"X3"X¼" ANGLE 2'-10" FOR 8'-0" C. TO C.
6"X3½"X¼" ANGLE 3'-6" FOR 8'-0" C. TO C.
PURLIN

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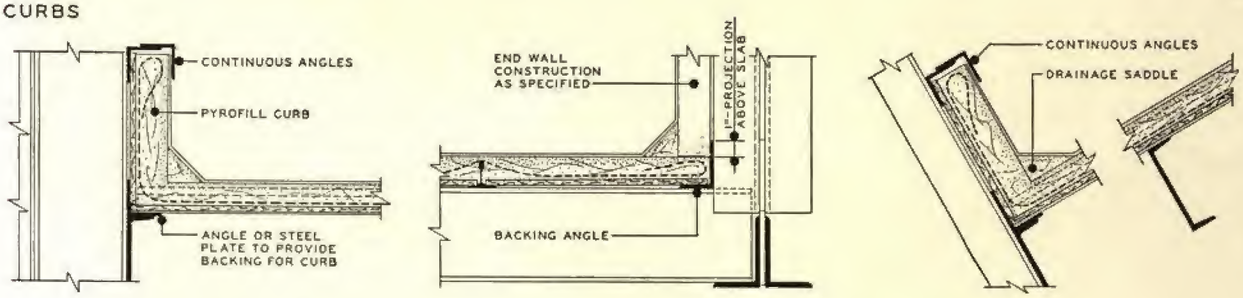
* T.M. REG. U.S. PAT. OFF.

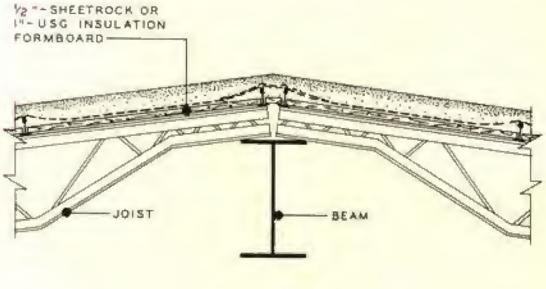
APPLICATION OVER BEAMS AND BAR JOISTS

details **Scale 3/4" = 1'-0"**

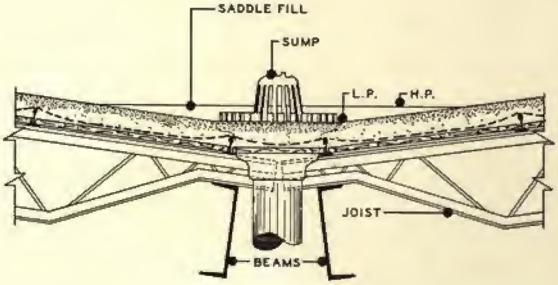
CURBS



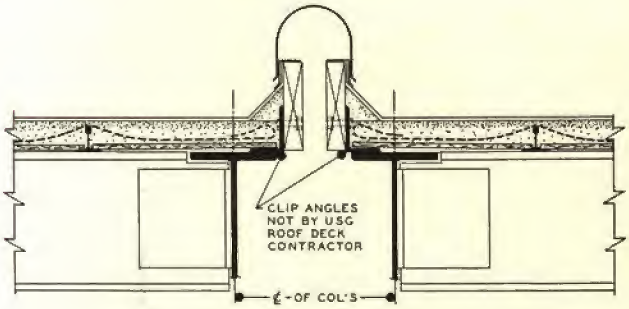
RIDGE DETAIL



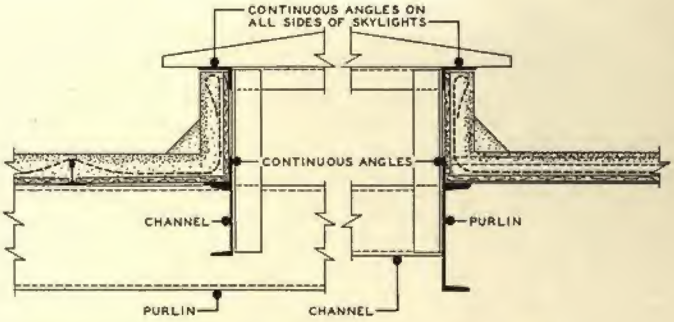
VALLEY DETAIL



EXPANSION JOINT

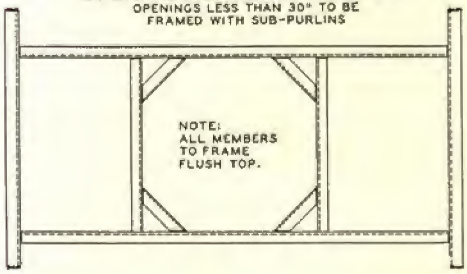


SKYLIGHT DETAIL

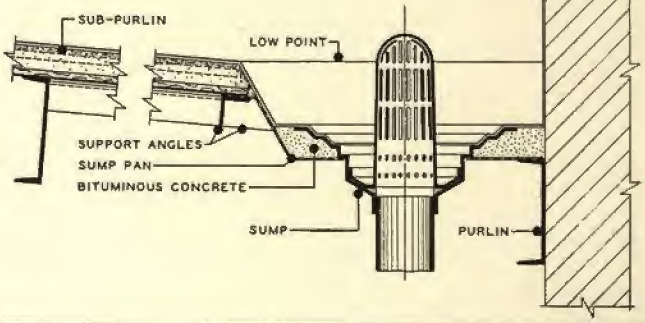


TYPICAL FRAMING AROUND OPENINGS LARGER THAN 30"

OPENINGS LESS THAN 30" TO BE FRAMED WITH SUB-PURLINS

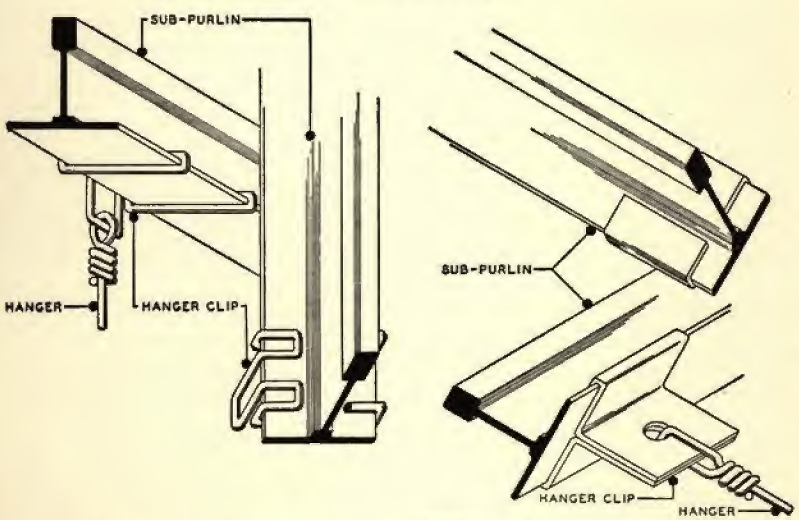


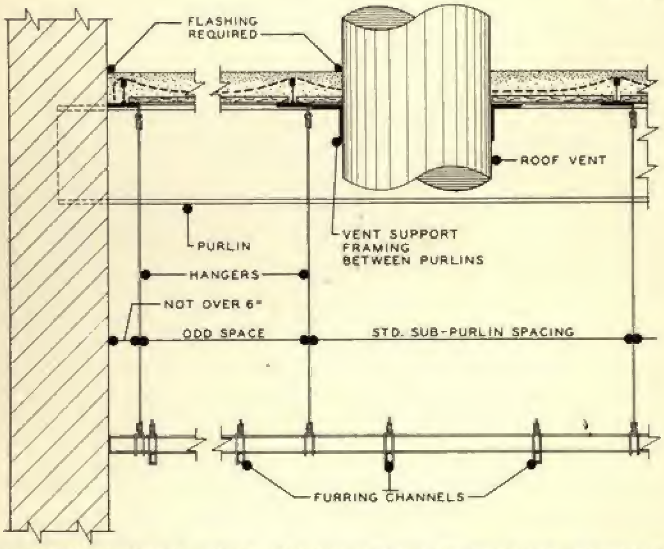
SUMP DETAIL



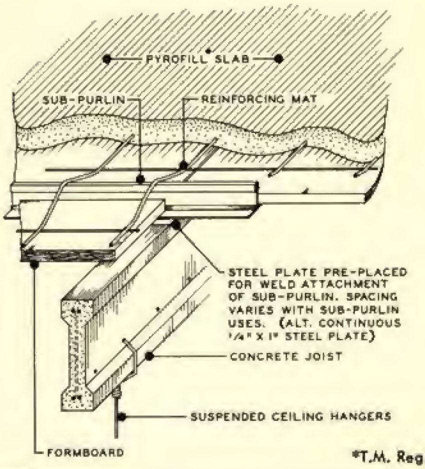
PYROFILL
GYPSUM ROOF DECKS

HANGER DETAILS





ATTACHMENTS HANGERS & CHANNEL GRILLAGE NOT BY USG* ROOF DECK CONTRACTOR
SUSPENDED CEILINGS
SCALE—¾"=1'0"


PYROFILL SLAB
SUB-PURLIN
REINFORCING MAT
STEEL PLATE PRE-PLACED FOR WELD ATTACHMENT OF SUB-PURLIN. SPACING VARIES WITH SUB-PURLIN USES. (ALT. CONTINUOUS 1/4" X 1" STEEL PLATE)
CONCRETE JOIST
SUSPENDED CEILING HANGERS
FORMBOARD

*T.M. Reg. U.S. Pat. Off.

SPECIFICATIONS

Scope of Work. The contractor shall furnish all labor, material, and equipment and install complete the poured gypsum roof decks, together with cants, curbs, and drainage fills as shown and specified. Approved shop drawings are required before work proceeds.

Materials. 1. Steel Sub-Purlins: Steel sub-purlins shall be an approved type capable of carrying the required dead load and live load, all to be cut to length and shop painted with one coat of an approved paint. All end joints are to bear on roof supports.

2. Formboards: Permanent formboards shall be (select as required):

a. USG ½" treated SHEETROCK formboard 32" wide, (for 48" see page 4: design) in lengths equal to main purlin spacings; provided, however, that where purlin spacings are 10 ft. or greater, formboard shall be one half the length of purlin spaces, with approved galvanized or painted tees to support cross-joints between sub-purlins.

b. PYROTONE or PYROFORM Mineral Fiber Formboard (specify type) complete with galvanized or painted sheet metal tees to support end joints where not supported by the roof framing.

c. 1" or ¾" treated USG Insulation Formboard 32" wide, in lengths equal to main purlin spacings.

d. USG Acoustical Formboard, 1" x 12" x 24", for sub-purlins spaced 24⅝" on center.

e. Asbestos cement board ¼" x 32" x 48", complete with approved galvanized or painted sheet metal tees to support end joints where not supported by the roof framing.

3. Reinforcing Mesh: Reinforcement in the poured gypsum slab shall be a galvanized welded wire mesh having 1 gauge longitudinal wires spaced 4" on center, or equivalent type, having an effective cross sectional area of not less than 0.026 sq. in. per foot of slab width.

4. Gypsum Concrete: Gypsum concrete shall be USG PYROFILL consisting of calcined gypsum and not more than 12½ per cent by weight of wood chips, shavings, or fibers.

Installation. 1. Steel Sub-Purlins: Place and weld each sub-purlin to main purlins at each contact point, using fillet welds ½" minimum length placed on alternate sides of sub-purlins where accessible.

2. Formboards: Place formboards on sub-purlin flanges with all end or cross-joints supported, forms to fit neatly on all four edges. Cut forms to fit at walls, curbs, and openings as required.

3. Reinforcement: Place reinforcing mesh with 12 gauge wires at right angles to sub-purlins. Lap mesh ends at least 6 inches. Do not lap sides of mesh. Cut mesh to fit at walls, curbs, and openings, and carry mesh into all areas where PYROFILL is poured.

4. Gypsum concrete: Mix PYROFILL with clean water only, as directed on bags. Pour over formboards to minimum depth of 2 inches. Screed all surfaces to a smooth, even plane ready to receive waterproof roof covering specified in another section. Pour cants, curbs, and drainage fills as shown or required. After pouring, leave roof deck free and clean for other trades.

Notes To Architect. Expansion joints should also be provided in the roof deck if they are provided in the main structure.

Where resistance to uplift forces is required, the bulb tee, trussed tee, and ASCE type sub-purlins are most effective. Other types may require supplementary anchorage.

Where suspended ceilings are required, USG recommends that they be hung from the main purlins wherever economically feasible. If they are hung to the roof deck, the hangers should be attached to the sub-purlins, never to the gypsum slab itself. Added weight of suspended ceiling affects sub-purlin size.

A.I.A. File 20-

TECHNICAL INFORMATION

USG® BUILDING METAL SPECIALTIES

UNITED STATES GYPSUM

1960

A.I.A. File 20-C

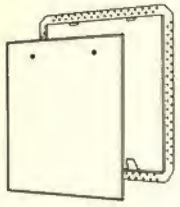
METAL SPECIALTIES

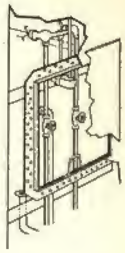
STEEL ACCESS PANELS

USG Steel Access Panels provide speedy and convenient access to key service points for plumbing, heating, electrical and air-conditioning systems. They eliminate costly cutting into walls and ceilings for inspection and maintenance of equipment. Ideal, too, for turning enclosed areas into valuable extra storage space.

Adaptable—can be used with walls and ceilings of metal lath or gypsum lath and plaster; gypsum wallboard; or, other wall and ceiling construction material.

Four practical sizes: 8" x 8", 12" x 12", 14" x 20" and 22" x 24".

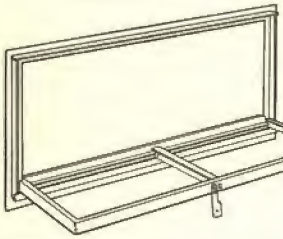


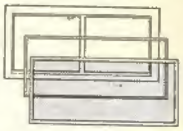


STEEL BASEMENT SASH

USG Steel Basement Sash is manufactured of sturdy, hot-rolled steel sections of uniform thickness. Fully automatic manufacturing equipment assures perfect fit of all parts for trouble free operation. Window can be easily removed or adjusted to half or full ventilating position. The latch provides a positive lock for security. The sill design provides maximum resistance to weather. The entire unit is protected from rust by a factory applied coat of gray primer. All sash provided with glazing clips and cork gaskets cemented in place for puttyless glazing, unless otherwise specified.

Sash Size (2 light)	Glass Size	Over-All Dimensions
1512M	15" x 12"	33⅜" x 15¼"
1516M	15" x 16"	33⅜" x 19¼"
1520M	15" x 20"	33⅜" x 23¼"





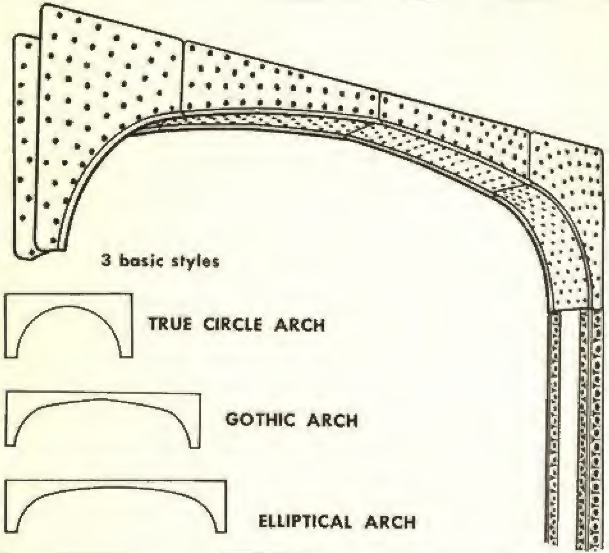
SCREENS AND STORM PANELS

Screens and Storm Panels are available for all sizes of USG Basement Sash. Screens are fabricated of bronze wire held rigidly in a cold-rolled electro-galvanized and painted steel frame.

READY-FORMED METAL ARCHES

USG Metal Arches are made of galvanized steel and perforated for proper plaster keying. They are ready to put in place as they come from the carton. Adaptable to most size openings and partition thicknesses. There are no forms to make; no corner bead to bend or shape by hand. The arch sections fit perfectly over 2 x 4 studs and any type lath, or over masonry of a similar thickness.

Style of Arch	Finished Opening	Arch Base to Header	Rough Opening
No. 11–True Circle	20"	10⅜"	21½"
No. 22–True Circle	31½"	16⅛"	33"
No. 33–Gothic	31½"	11¹³⁄₁₆"	33"
No. 36–Elliptical	37½"	11⅜"	39"
No. 44–Gothic	49½"	12⅞"	51"
No. 55–Elliptical	61½"	13¼"	63"
No. 66–Elliptical	70½"	13¼"	72"



METAL LATH PLASTER BASES

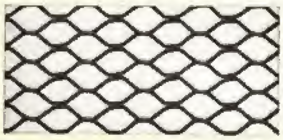
USG Junior Diamond Mesh Lath. A general all-purpose lath. Made of copper alloy steel, painted; in weights of 2.5 or 3.4 lb per sq yd. Galvanized steel available in 3.4 lb only. Also manufactured in self-furring type for use in column fireproofing, exterior stucco and for replastering old plaster surfaces. Size: 27" x 96".

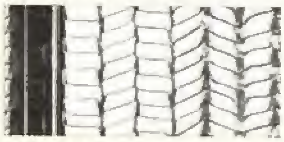
USG 4-Mesh Riblath. A plaster-saving lath designed to meet the demand for a more rigid type plaster base. Made only of copper alloy steel painted. Size 27" x 96", Weight: 2.75 lbs and 3.4 lbs per sq yd.

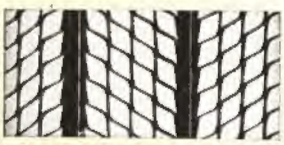
USG ⅜" Riblath. Herringbone pattern mesh with ⅜" V-shaped ribs to provide exceptional rigidity. Use when supports are over 16" and not more than 24" c to c.; for 2" solid studless metal lath and plaster partitions; and as centering for concrete floor and roof slabs. Copper alloy steel only. Size: 27" x 96". Weight: 3.4 lb and 4.0 lbs. per sq yd.

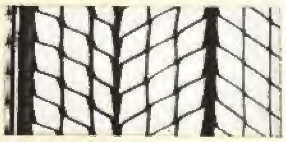
USG ¾" Riblath. A heavy structural riblath used primarily for centering and reinforcement of concrete floor and roof slabs. Sizes: 2' x 8', 2' x 10' and 2' x 12'. Weight: .60 psf and .75 psf.

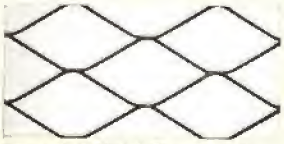
USG Expanded Metal Stuccomesh. Diamond pattern mesh (1⅜" x 3⅛") lath designed as a base and reinforcement for exterior stucco. Applied with stucco furring nails. Size: 48" x 99". Weight: 1.8 lb and 3.6 lb per sq yd.


Diamond Mesh Lath


¾" Riblath


4-Mesh Z-Riblath


⅜" Riblath


Expanded Metal Stuccomesh

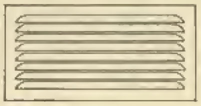
USG ALUMINUM LOUVERS

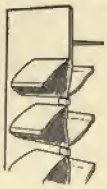
USG Aluminum Louvers are available in many designs and sizes to fill any architectural need and provide the maximum amount of free ventilating area for the size of the opening. Strongly built of durable, rust-proof aluminum they will last the lifetime of the building. An exclusive patented louver design assures protection against heavy rain or snow with maximum ventilating area.

FHA Requirements and USG Louver Specifications—Page 4

RECTANGULAR LOUVERS

Balanced air flow—larger openings compensate for solid portion of screen, giving greater free ventilating area. More openings per unit, all are functional. May be installed as flush type or self-casing without cutting or notching studs. Built-in 8 mesh rust-proof screen; 16-mesh optional. Maximum weather protection.

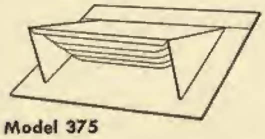




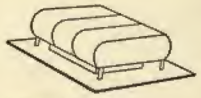
12 SIZES—

PITCHED ROOF VENTILATORS

Made of heavy embossed aluminum. Suitable for most pitched roofs. Model 64 can be installed on flat roofs. Exclusive design provides excellent weather protection and larger free ventilating area.



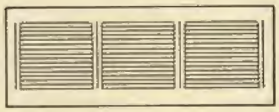
Model 375



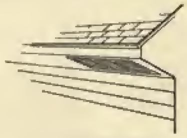
Model 64

EXTERIOR AIR VENTS

For under-eave installation. Especially suitable for hip roof construction. Small louver design gives excellent weather protection.

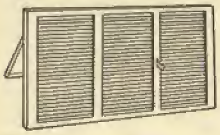


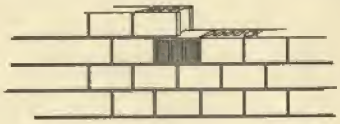
3 SIZES—



FOUNDATION VENTS (Masonry)

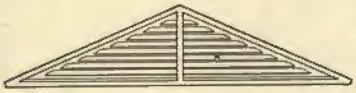
Made of stamped or cast aluminum to match concrete block size. Available with or without door and with or without screening. May be used as interior partition or door vents.





FIXED PITCH TRIANGULAR LOUVERS

Made of embossed aluminum, in two sections for ease of handling and installation. Large ventilating capacity. Well suited for use with attic fans. Built-in 8-mesh rust-proof screen; 16-mesh optional.

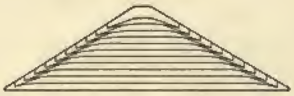


8 SIZES—

MULTI-PITCH* Adjustable Louvers

Designed to fit any pitch from 4-12 to 12-12 by a unique adjustable feature which keeps the openings equally spaced regardless of pitch. For use with Gable Roofs. Installed under facia board, no need to cut or notch studs.

4 MODELS—

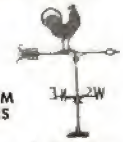


Cupola CU-PO-VENT* Ventilators

Designed to provide maximum ventilation for flat, hip and low-pitched roofs. Well suited for use with attic fans. Roof section is sound-cushioned with undercoating. With or without weather vanes.

CAST ALUMINUM WEATHERVANES

4 MODELS—

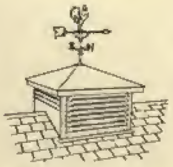


1. Crowing Rooster

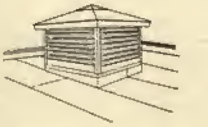
2. Boxer Dog

3. Flying Duck

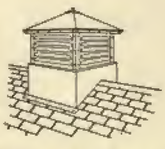
4. Country Doctor



Model 3, designed for ridge mounting on low-pitched roofs up 6-12 pitch. Shipped with complete assembly instructions. (weather vane extra.)



Model 7, designed for hip roof, flat roof or curb mounting (roof curb not furnished). Shipped with complete assembly instructions.



Model 5, designed for roof pitches up to 10 in 12. Shipped completely assembled with curb, ready for installation.

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* Reg. T.M. of Home Comfort Mfg. Co., Peoria, Ill.

METAL SPECIALTIES

VENTILATION

Proper attic ventilation is a necessity for all homes, particularly if an adequate vapor barrier is not used in top floor ceiling construction. Inadequate ventilation causes condensation in winter resulting in wet, ineffective insulation, damaged interior finishes, paint peeling, wood rot, curled sheathing and roofing. In summer, high attic and interior temperatures result.

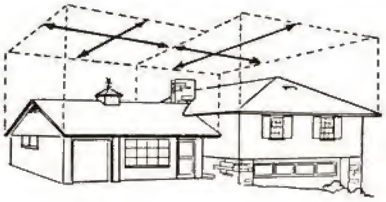

TABLE OF REQUIRED FREE AREA

Width (in feet)

LENGTH (in feet)	20	22	24	26	28	30	32	34	36	38	40	42
20	192	211	230	250	269	288	307	326	346	365	384	403
22	211	232	253	275	296	317	338	359	380	401	422	444
24	230	253	276	300	323	346	369	392	415	438	461	484
26	250	275	300	324	349	374	399	424	449	474	499	524
28	269	296	323	349	376	403	430	457	484	511	538	564
30	288	317	346	374	403	432	461	490	518	547	576	605
32	307	338	369	399	430	461	492	522	553	584	614	645
34	326	359	392	424	457	490	522	555	588	620	653	685
36	346	380	415	449	484	518	553	588	622	657	691	726
38	365	401	438	474	511	547	584	620	657	693	730	766
40	384	422	461	499	538	576	614	653	691	730	768	806
42	403	444	484	524	564	605	645	685	726	766	806	847
44	422	465	507	549	591	634	676	718	760	803	845	887
46	442	486	530	574	618	662	707	751	795	839	883	927
48	461	507	553	599	645	691	737	783	829	876	922	968
50	480	528	576	624	672	720	768	816	864	912	960	1008

HOW TO USE—Using length and width dimensions of each rectangular or square attic space, find one dimension on vertical column, other dimension on horizontal column. These will intersect at number of square inches of ventilation required by F.H.A.

FHA REQUIREMENTS

ATTIC AREA—Provide cross ventilation for all spaces between roof and top floor ceiling with corrosion-resistant 8 mesh screened louvers as follows:

ROOFS WITH SLOPES 2 IN 12 OR GREATER—1/300 of the horizontal projection of the roof area over each space. One-half the required ventilation shall be in the upper part of the ventilated space as near the high point of the roof as practicable.

ROOFS WITH SLOPES LESS THAN 2 IN 12—1/150 of the horizontal projection area over each space unless a complete continuous vapor-barrier is provided, in which case, use 1/300.

FOUNDATION VENTILATION—provide cross ventilation by corrosion-resistant screened vents, 8 mesh per inch, as follows: 2 sq. ft. per 100 lineal ft. of foundation plus 1/300 of the ground area. Minimum, 4 vents located at corners.

REQUIRED LOUVER AREA FOR ATTIC FANS—the data listed in the following USG louver specifications shows the cubic feet per minute capacity of each USG louver. Use one or a combination of louvers having a C.F.M. capacity equivalent to the C.F.M. capacity of the fan to be installed.

USG LOUVER SPECIFICATIONS ▶

The ventilating areas shown are not gross, but net, as required by F.H.A. All restrictions have been allowed for.

Fan capacities shown have been calculated in accordance with F.H.A. requirements and the recommendations of the Propeller Fan Manufacturers Association bulletin No. 52. "Residential Ventilating Guide," second edition.

RECTANGULAR WALL LOUVERS

Name or Size	Opening Size	Net Ventilating Area*	Fan Capacity in C.F.M.
8″ x 8″	8½″ x 8½″	29.6 sq. in.	225
8″ x 12″	8½″ x 12½″	44.4 sq. in.	340
8″ x 16″	8½″ x 16½″	60 sq. in.	460
12″ x 12″	12½″ x 12½″	75 sq. in.	570
12″ x 18″	12½″ x 18½″	112 sq. in.	860
12″ x 24″	12½″ x 24½″	150 sq. in.	1140
14″ x 24″	14½″ x 24½″	172 sq. in.	1300
24″ x 30″	24¾″ x 30¾″	380 sq. in.	2900
30″ x 12″	30¾″ x 12¾″	170 sq. in.	1310
30″ x 18″	30¾″ x 18¾″	255 sq. in.	1930
30″ x 24″	30¾″ x 24¾″	340 sq. in.	2620
30″ x 34″	30¾″ x 34¾″	481 sq. in.	3670

PITCH ROOF LOUVERS

Name or Size	Opening Size	Net Ventilating Area*	Fan Capacity in C.F.M.
Model 64	8″ x 8″	64 sq. in.	390
Model 375	12¾″ x 6¼″	37.5 sq. in.	280

EXTERIOR AIR VENT

Name or Size	Opening Size	Net Ventilating Area*	Fan Capacity in C.F.M.
16″ x 4″	14½″ x 3⅛″	26 sq. in.	195
16″ x 5⅝″	14½″ x 4½″	38 sq. in.	285
16″ x 8″	14½″ x 6¾″	57 sq. in.	427

FOUNDATION VENTS (Masonry)

Name or Size	Opening Size	Net Ventilating Area*	Fan Capacity in C.F.M.
FM (plain)	15⅝″ x 7⅝″	45 sq. in.	—
FM (w/d)	15⅝″ x 7⅝″	45 sq. in.	—
No. 100	15 9/16″ x 7¾″	*57.5 sq. in.	—
No. 200	15 9/16″ x 7¾″	*60.5 sq. in.	—

Increased without screen

FIXED-PITCH TRIANGULAR LOUVERS

Pitch	Base Length	Altitude		
3/12	120″	15″	344 sq. in.	2611
4/12	96″	16″	292 sq. in.	2190
4/12	120″	20″	502 sq. in.	3370
4/12	144″	24″	760 sq. in.	5700
5/12	96″	20″	408 sq. in.	3140
5/12	120″	25″	658 sq. in.	4935
5/12	144″	30″	987 sq. in.	7403
6/12	96″	24″	495 sq. in.	3600

MULTI-PITCH ADJUSTABLE TRIANGULAR LOUVERS

Model 47

Pitch	Base Length	Altitude		
4/12	64″	10¾″	204 sq. in.	1310
7/12	41½″	12″	134 sq. in.	950

Model 47 Jr.

Pitch	Base Length	Altitude		
4/12	52½″	8¾″	140 sq. in.	875
7/12	34½″	10″	90 sq. in.	650

Model 712

Pitch	Base Length	Altitude		
7/12	41⅛″	12″	144 sq. in.	940
12/12	27¾″	13⅞″	100 sq. in.	735

Model 712 Jr.

Pitch	Base Length	Altitude		
7/12	30⅜″	8⅞″	82 sq. in.	515
12/12	21½″	10¾″	59 sq. in.	440

CUPALA "Cu-po-vent" VENTILATORS

Model	Base Size	Altitude		
3	33″ x 33″	29″	567 sq. in.	4150
7	33″ x 33″	29″	794 sq. in.	5950
5	17″ x 17″	25″	215 sq. in.	1630

Cu-Po-Vent opening sizes given in instructions for installation.
*Certified by Metal Ventilator Institute

TECHNICAL INFORMATION

ROCKLATH* PLASTER BASE METAL LATH & ACCESSORIES

PLASTER BASES
ATTACHMENT SYSTEMS
PARTITION CONSTRUCTIONS

UNITED STATES GYPSUM

1960

*T. M. Reg. U. S. Pat. Off.

INTRODUCTION

It is universally acknowledged that a completed plaster job can be no better than the base to which it is applied. The United States Gypsum Company produces a wide variety of lathing and plastering bases and systems designed to assure the best in plastered construction for a wide range of building types.

While metal lath has long been considered a standard of quality as a plastering base for work of a commercial or institutional nature, sound professional judgment also recognizes the use of ROCKLATH is often better suited for many conditions. For best plastering results, the use of both bases should be carefully considered, each assigned to those conditions it can best resolve.

This catalog is designed to assist the architect or builder in selection of these plaster bases, and systems for their support. The catalog outlines good practice for normal construction problems.

United States Gypsum maintains an architect's service department of specially trained personnel available for consultation on special problems or conditions.

Address: United States Gypsum Company
Architects Service Department
300 West Adams, Chicago 6, Illinois

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Lathing accessories (metal lath)	8, 9, & 15
Lathing accessories (ROCKLATH)	10, 11, & 15
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ROCKLATH—Plaster Base	33–39
USG Color-Rite metal lath	39–44

*T.M. Reg. U.S. Pat. Off.

DESCRIPTION

ROCKLATH plaster base is a gypsum lath made in sheet form providing a rigid base for the economical application of gypsum plasters. It is composed of a special gypsum core, faced on the sides and long edges with paper specifically manufactured for this purpose.

Complies with: ASTM Designation C37 and Fed. Spec. SS-P-431a

FUNCTION AND UTILITY

Fireproof—When used with gypsum plasters ROCKLATH plaster bases provide fire ratings as shown in the technical data tables.

Strength—Gypsum plaster adheres to ROCKLATH with a strong bond. A pull of 864 lbs. per sq. ft. is required to separate the plaster from the lath, providing a safety factor of 144. The large sheets when plastered add appreciable distortion resistance to the frame.

Durability—Gypsum is a mineral not affected by time, decay, dry rot or normal humidity conditions. Does not attract vermin.

Economy—ROCKLATH is low in cost, has general market acceptance, is quickly and easily applied and permits substantial savings in plastering materials and labor.

Resistance to Sound Transmission—ROCKLATH and plaster used in conjunction with partition assemblies and USG* attachment systems provide substantial resistance to sound transmission. (See Technical Data)

LIMITATIONS OF USE

1. Not recommended for use as a plaster base for portland cement or lime plasters.

2. ⅜″ ROCKLATH is designed for supports not to exceed 16″ on centers. For spacings greater than 16″ and not more than 24″, ½″ ROCKLATH should be used.

3. Where ⅜″ ROCKLATH is used in conjunction with resilient clips (supported at long edges only) or where ½″ ROCKLATH is used on supports exceeding 16 inches o.c., three coat plaster application is recommended to eliminate the possibility of sagging during plastering.

4. Where lath and plaster ceilings are located under the roof construction, the space thus established, whether with or without vapor barrier and insulation, should be ventilated in accordance with good engineering practice.

5. ROCKLATH plaster base should not be used where exposed to excessive moisture or humidity.

6. Fire Resistance and Sound Transmission Loss Ratings shown in Technical Tables are based on panel test at recognized laboratories and apply only to type, thickness and combination listed. These ratings indicate only the relative performance of the assemblies.

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*T.M. Reg. U S. Pat. Off.

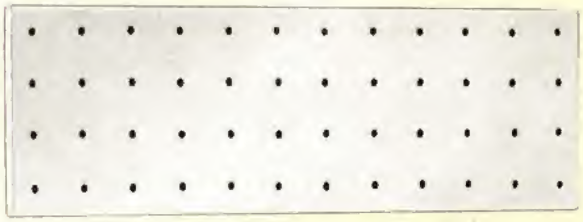
TYPES

PLAIN ROCKLATH

Recommended for nail-on application to wood and nailable steel framing and for clip attachment to wood framing, steel studs and suspended metal grillage.

Size: 16 x 48 inches, ⅜ or ½ inch thick.

(Also made 16⅕ inches wide for Pacific Coast area)



PERFORATED ROCKLATH

Perforated ROCKLATH is identical in all respects with plain Rocklath plaster base except ¾ inch round holes are punched through the lath 4 inches on center in each direction, one ¾" diameter hole for each 16 sq. in. of lath area. This provides, in addition to the natural plaster bond, a mechanical key. Higher fire ratings are obtained by the use of perforated ROCKLATH and gypsum plaster. (See Technical Data Tables, pages 31 & 32.)

Perforated ROCKLATH plaster base is not recommended for attachment to ceilings, either wood framing or metal grillage, where the only support provided is by clips at edges.

INSULATING ROCKLATH

Insulating ROCKLATH provides all the advantages of plain ROCKLATH as a rigid plaster base, and is manufactured in the same sizes. Bright aluminum foil is laminated to the back of plain ROCKLATH providing an effective vapor barrier at no additional labor cost.

Insulation—When properly installed with at least a ¾ inch air space next to the foil, insulating ROCKLATH provides positive insulation having a resistance of 3.19. When used on horizontal surfaces, for retarding the downward flow of heat, its insulating value is 6.66, or more than doubled. (See Thermal Resistance Chart.) Tests and field observations over an extended number of years show that, in normal use, there has been insufficient corrosion of the foil to harm the insulating and vapor barrier characteristics of insulating ROCKLATH. The effect of dust on insulating ROCKLATH in a vertical position is negligible. A greater than normal dust deposit accumulation on insulating ROCKLATH in a horizontal position is required to seriously affect its insulating characteristics.

Economy—Labor costs for application of insulating ROCKLATH plaster base are no more than for plain or perforated ROCKLATH.

THERMAL RESISTANCE (R) OF INSULATING ROCKLATH

SURFACE, HEAT FLOW & SEASON			ROCKLATH ⅜"	ROCKLATH ½"
HORIZONTAL	(up)	Winter	3.19	3.32
HORIZONTAL	(dn)	Summer	6.66	6.79
VERTICAL	(hor)	Winter	3.76	3.89
VERTICAL	(hor)	Summer	3.65	3.78

NOTE: All figures are based on the 1959 ASHAE GUIDE. (½" plaster and facing air space ¾"—4".)

LONG LENGTH ROCKLATH PLASTER BASE

Long Length ROCKLATH is manufactured ½" thick, 24" wide, mill cut to ceiling high lengths as required up to 12 feet, and is formed with longitudinal "V" edges.

It is designed primarily for use as a plaster base in 2" solid ROCKLATH and plaster partitions. (See 2" Solid ROCKLATH and Plaster Partition Section for Details.)

LONG LENGTH INSULATING ROCKLATH

Long Length Insulating ROCKLATH is manufactured ⅜" thick, 24" wide with square edges, and mill cut to ceiling high lengths, as required, with bright aluminum foil laminated to the back side.

Designed primarily for furring exterior masonry wall construction. (See Section on USG Exterior Wall Furring System.)

ROCKLATH ACCESSORIES

BRIDJOINT* CLIPS

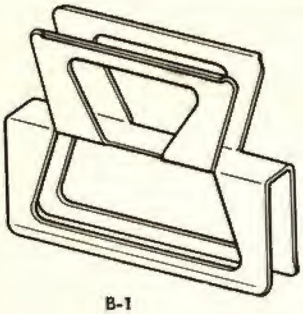
Specially formed steel clips designed to provide a rigid alignment of gypsum lath where ends of lath do not fall at or on structural members.

BRIDJOINT Clip B-1

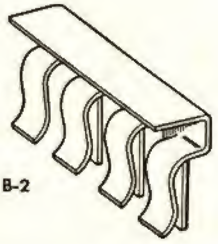
Field clip for ⅜" Rocklath to support end joints of lath. Also manufactured for use with ½" Rocklath.

BRIDJOINT Clip B-2

Used in conjunction with B-1 clips to eliminate nailing in corners and angles. For ⅜" Rocklath only.



B-1



B-2

BRACE-TITE* Clips

Special wire clips for attaching Rocklath Plaster Base to metal grillages of ¾" cold rolled channels or Trussteel* Studs when spaced not over 16" o.c.

BRACE-TITE Field Clip BT-1

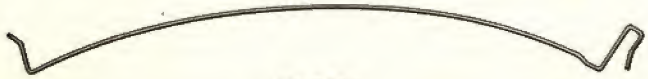
Used for suspended ceilings, exterior wall and beam furring and hollow pipe chase partitions. Designed to provide support across the full width of the lath and has spring action to increase rigidity. Designed for use only with standard ¾" cold rolled channels having ½" legs (minimum). Not for use with hot rolled channels.

BRACE-TITE Starter Clip BT-1

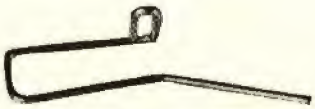
Used in conjunction with BT-1 field clip to start first course of lath.

BRACE-TITE Acoustical Clip BT-A

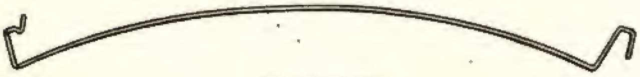
Used for suspended ceilings with adhesive attachment of acoustical tile. Designed to provide support across the full width of the lath and not interfere with alignment of the tile.



Field Clip



Starter Clip



Acoustical Clip

TRUS-LOK* Field Clip TL-1

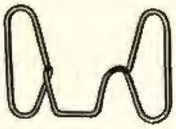
For attaching Rocklath Plaster Base to Trussteel Studs.

TRUS-LOK Starter Clip TL-2

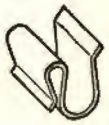
Used in conjunction with TL-1 clips to start first course of lath.

TRUS-LOK Finisher Clip TL-3

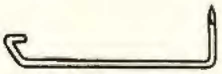
Used in conjunction with Trus-Lok TL-1 Clips and metal runner to finish top course of lath.



TL-1



TL-2



TL-3

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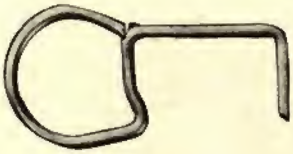
*T. M. Reg. U.S. Pat. Off.

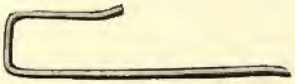
USG BRACING CLIP

For attaching ¾″ channels to ½″ long length ROCKLATH as temporary braces in 2″ solid ROCKLATH and plaster partition construction.



CEILING RUNNER CLIPS

Used for attaching ½″ long length ROCKLATH to "L" shaped ceiling runner.



USG RESILIENT LATHING SYSTEMS

USG Resilient Clips are specially formed to provide a non-rigid or floating attachment of ⅜″ ROCKLATH Plaster Bases to the structural frame, affording:

1. Increased protection against plaster cracking due to structural movement.
2. Increased sound transmission loss through the resilient attachment.

Resilient Clip R-1

For wood studs or joists spaced 16″ o.c. attached by nailing with 13 gauge, 1⅛″ lathing nail. ROCKLATH is floated ⅜″ free of framing members and held in place by the prongs of the clip.

Resilient Clip R-2

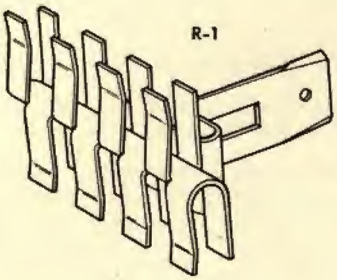
For corners and angles of wood frame construction. Used in conjunction with the R-1 Clips.

Resilient Clip R-3

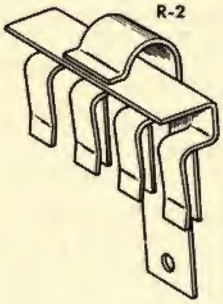
For suspended ceilings, resilient attachment of ⅜″ ROCKLATH to ¾″ cold rolled furring channels. ROCKLATH is held ½″ away from direct contact with the channel.

Resilient Clip R-5

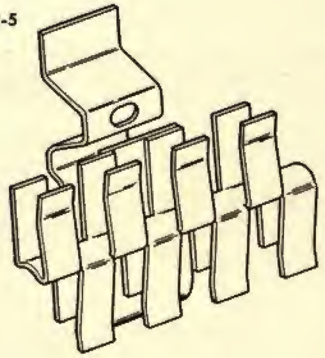
For masonry walls. Nailed in place over PYROBAR* Partition Tile, lightweight concrete units or clay tile, using 2″ staple or 10d cut nails driven into the solid sections of the units or by using toggle bolts in hollow sections of the unit. Spaced 16″ o.c. vertically and horizontally. ROCKLATH is resiliently furred out 1″ from the face of the masonry.



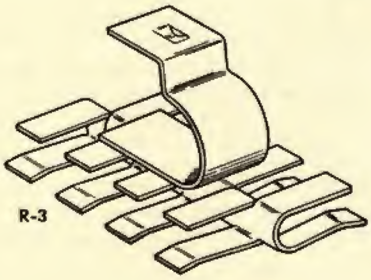
R-1



R-2



R-5



R-3

USG COLOR-RITE
METAL LATH

DESCRIPTION

Metal lath is sheet steel that has been slit and expanded to form a multitude of small mesh openings.

It is made from rust-resisting copper alloy steel and is further protected by dipping the expanded sheet into black asphaltum paint. (Exception: 3.4 lb. diamond mesh when made from galvanized sheets.) For sizes and weights—See Data and allowable spans see Technical Data page 12.

USG COLOR-RITE METAL LATH represents the newest development in the metal lath industry. Ends of bundles are spray painted ***red*** for all 3.4 lb. lath, ***white*** for 2.5 lb. diamond mesh and 2.75 lb. Z-rib, ***yellow*** for 4.0 lb. ⅜″ riblath. This makes warehousing, inventory and job distribution easier and ***positive***. An architect may quickly and ***visually*** inspect a job to make sure the weight lath he specified is used.

FUNCTION AND UTILITY

Metal lath is primarily used as a plaster base. Certain types are used as centering lath for poured concrete.

Fire Resistance and Sound Transmission—Metal lath and gypsum plaster assemblies provide the fire resistance and sound transmission ratings as shown in panel tests at Nationally Recognized Testing Laboratories (See pages 31 and 32). These ratings apply only to the types and thicknesses listed, and indicate only the relative field performance.

Strength and Reinforcing—Metal lath embedded within the plaster thickness provides tensile strength in a manner similar to steel reinforcement in concrete slabs, thus providing unusually high resistance to transverse impact. It decreases the hazards of cracks and failures due to structural movement of the frame.

Flexible—Metal lath is readily shaped to ornamental contours to a degree not possible with other plaster bases.

Quality Plastering—The use of metal lath as a plaster base is conductive to good plastering because oversanding in the scratch coat and thin applications of basecoat are impractical.

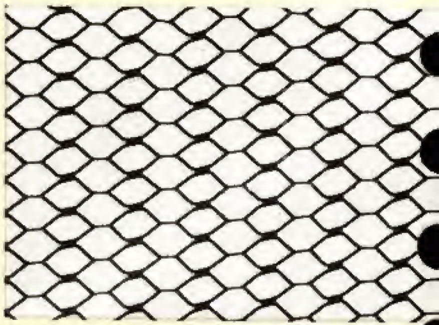
Long Range Economy—Metal lath is intended for highest quality, fire resistant, durable plastering with low maintenance costs.

LIMITATIONS OF USE

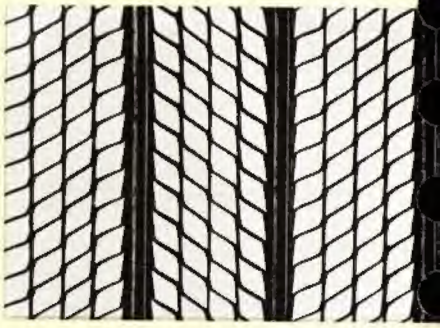
1. The minimum weights of lath for spacing of supports listed in Technical Data on page 12 must be observed.
2. The securing of metal lath to supports should be in accordance with the specifications printed herein.
3. Sand used for plastering must be clean. Unwashed salt water sand should not be used.
4. When abnormally high humidity, moisture, acid fumes or unusual job conditions are anticipated, refer to USG Architect Service representative.
5. When contact, furred or suspended ceilings are used under roof construction, the space between ceiling and roof shall be vented in accordance with good engineering practice.

CAUTION—Failure to observe these limitations may result in failure to provide the Function & Utility.

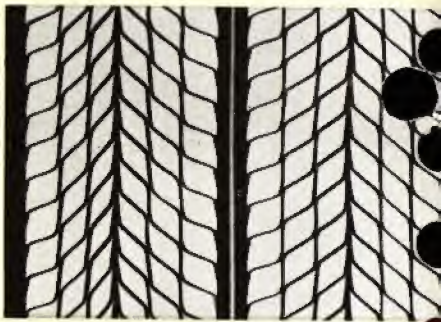
types



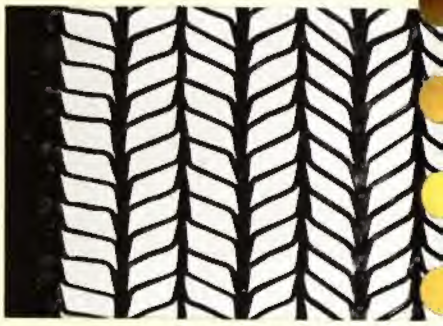
USG Junior Diamond Mesh Lath



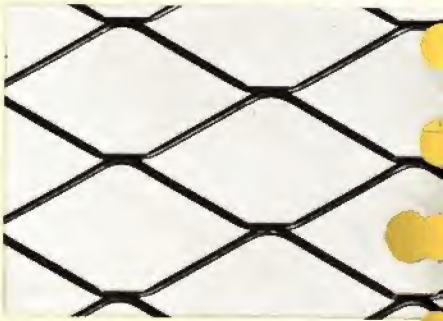
USG 4-Mesh Z-Riblath



USG ⅜″ Riblath



USG ¾″ Riblath



USG Expanded Metal Stucco Mesh

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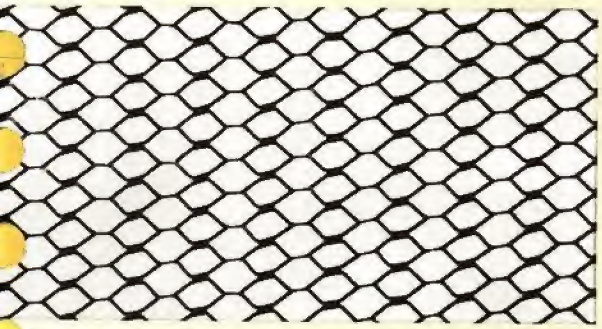
*T.M. Reg. U.S. Pat. Off.



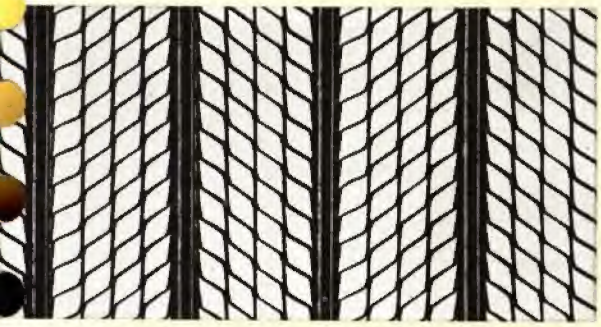
USG JUNIOR DIAMOND MESH LATH

A small diamond mesh metal plaster base (approximately 11,000 meshes per yard).

A general all-purpose lath. Best for ornamental, contour plastering. The small meshes conserve plaster and reduce droppings. Nationally available. Also available in self-furring type having ¼" "dimple" indentations spaced 1½" o.c. each way for use as exterior stucco base, column fireproofing and for replastering over old surfaces.

Size: 27" x 96".

Weights: 2.5 lbs. *(End Painted White)* and 3.4 lbs. *(End Painted Red)* per sq. yd.



USG 4-MESH Z-RIBLATH

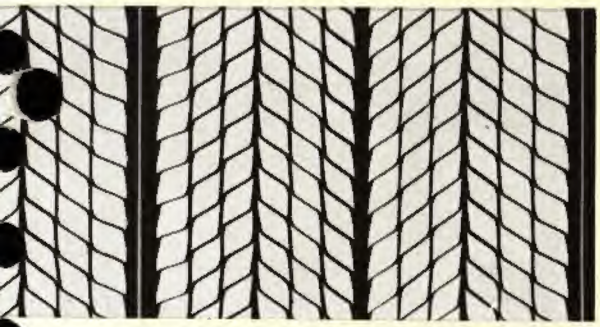
A "flat rib" type of lath with smaller mesh openings. Suitable for "double-up" type of plastering. An excellent nail-on lath, or for tie-on work on flat ceilings.

Size: 27" x 96".

Weights: 2.75 lbs. *(End Painted White)* and 3.4 lbs. *(End Painted Red)* per sq. yd.

Limitations of Use

Use Diamond Mesh lath for contour plastering.



USG ⅜" RIBLATH

A herringbone mesh pattern with ⅜" V-shaped ribs running lengthwise of the sheet at 4½" intervals, with inverted intermediate ³⁄₁₆" ribs.

The heavy ribs provide exceptional rigidity. Used when supports are spaced more than 16" o.c. and not more than 24" o.c. and for 2" solid studless metal lath and plaster partitions. Used as a centering lath for concrete floor and roof slabs.

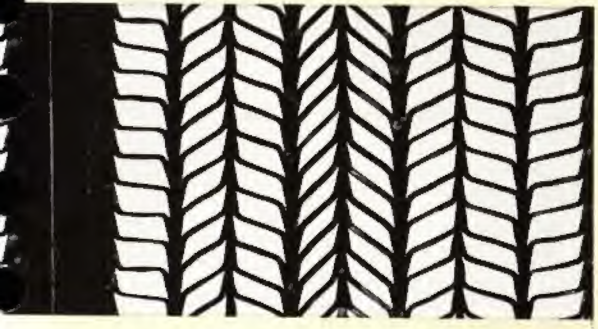
Size: 27" x 96". (Other lengths available.)

Weights: 3.4 lbs. *(End Painted Red)* and 4.0 lbs. *(End Painted Yellow)* per square yard.

Limitations of Use

Its extreme rigidity makes ⅜" Riblath unsuitable for contour plastering. Use Diamond Mesh Lath.

Due to ⅜" rib, minimum ground thickness must be 1".



USG ¾" RIBLATH

A herringbone mesh pattern with ¾" deep V-shaped ribs lengthwise of the lath at 6" intervals.

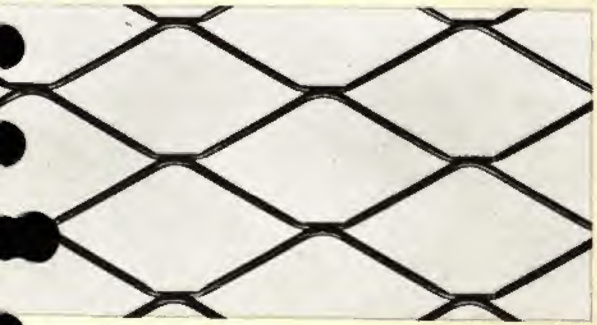
A structural lath, providing the dual functions of centering and reinforcement for concrete floor and roof slabs.

Sizes: 2' x 8', 2' x 10' and 2' x 12'.

Weights: .60 lb. and .75 lb. per square foot.

Limitations of Use

Not recommended as a plastering lath.



USG EXPANDED METAL STUCCO MESH

A 1⅜" x 3⅛" diamond mesh pattern made of copper alloy steel, asphaltum painted. Designed as a base for exterior stucco, hand or pump applied.

Size: 48" x 99".

Weights: 1.8 lbs. and 3.6 lbs. per sq. yd.

Limitations of Use

Should be applied with 1½" galvanized self-furring nails.

When used over sheathing other than wood, fasten with longer nails, providing a minimum penetration of 1⅛" into studs.

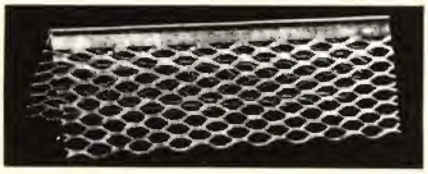
ROCKLATH & METAL LATH ACCESSORIES

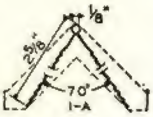
USG CORNER BEADS

USG corner beads should be used on all external plaster angles to provide: (1) plaster protection, (2) true and straight lines at angles and (3) grounds for plastering.
Lengths: 7′, 8′, 9′, 10′ and 12′. Gauge of Steel: 26 gauge galvanized.

1-A EXPANDED CORNER BEAD

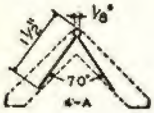
Its wide expanded flanges are easily flexed. Preferred for irregular corners. Provides increased reinforcement close to nose of bead.





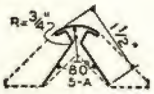
4-A FLEXIBLE CORNER BEAD

The general purpose corner bead. Economical and most generally used. By snipping flanges, this bead may be bent to any curved design (for archways, telephone niches, etc.). Can be secured to corners with 9-A Corner Bead clip attached to flanges.



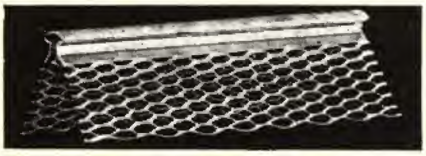
5-A BULL NOSE CORNER BEAD

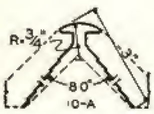
A ¾″ radius bull nose bead with short flange. Used for rounded corners. Can be secured with No. 9-A Corner Bead Clips attached to flanges, where wide nailing flanges are required.



10-A EXPANDED BULL NOSE CORNER BEAD

A bull nose bead similar to above, but with 2½″ wide expanded flanges. Especially suitable on irregular corners.

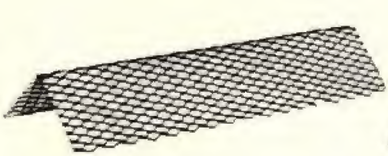


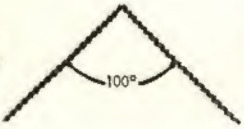


USG SELV-EDGE CORNERITE AND STRIPLATH

Cornerite is a strip of copper alloy, painted, Diamond Mesh lath, bent lengthwise in the center, to form a 100° angle. Cornerite should be used in all internal plaster angles as reinforcement where metal lath is not lapped or carried around; over non-ferrous lath anchored to the lath; over internal angles of masonry constructions. (Cornerite is optional in Resilient, Brid-joint* lathing system. If used, it is secured to the lath, not the supports.)
SIZES: 2″x 2″ x 96″—3″ x 3″ x 96″.

Striplath is a strip of Diamond Mesh lath, copper alloy, painted—used as a plaster reinforcement over joints of non-metallic lathing bases and where dissimilar bases join.
SIZES: 4″ x 96″—6″ x 96″.



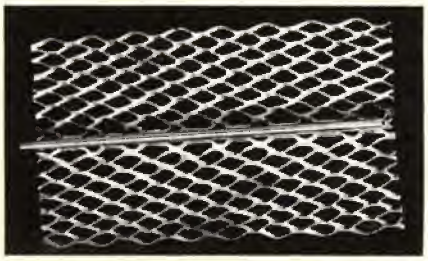


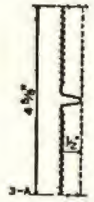
USG SCREEDS

USG Screeds are used to divide different types of plaster finishes and as a separation between plaster and a cement base, or a permanent incombustible screed to control plaster thickness and alignment beneath the wood or other rigid base trim. Lengths: 10′-0″. Made of 26 gauge galvanized steel.

3-A EXPANDED BASE SCREED

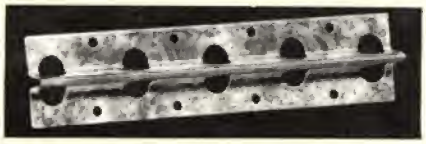
A flush type ½″ ground (job shimmed for ¾″ grounds) with wide flexible expanded flanges for added reinforcement. Used as a dividing strip between plaster and flush portland cement base.

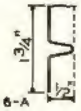




6-A PLAIN BASE SCREED

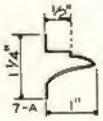
A flush type ½″ ground (job shimmed for ¾″ grounds), used as a straight divider strip between different types plaster, as between gypsum and portland cement.





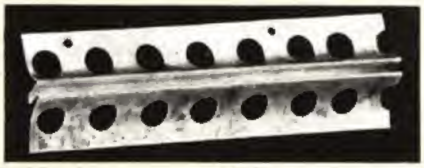
7-A CURVED POINT BASE SCREED

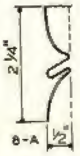
A dividing strip for use between plaster surface and projecting portland cement base. Upper ground is ½″, bottom ground is 1″.



8-A PICTURE MOULD

A concealed mould. Attached to lath and plastered flush to the notch opening. Grounds ½″ (job shimmed for ¾″ grounds).





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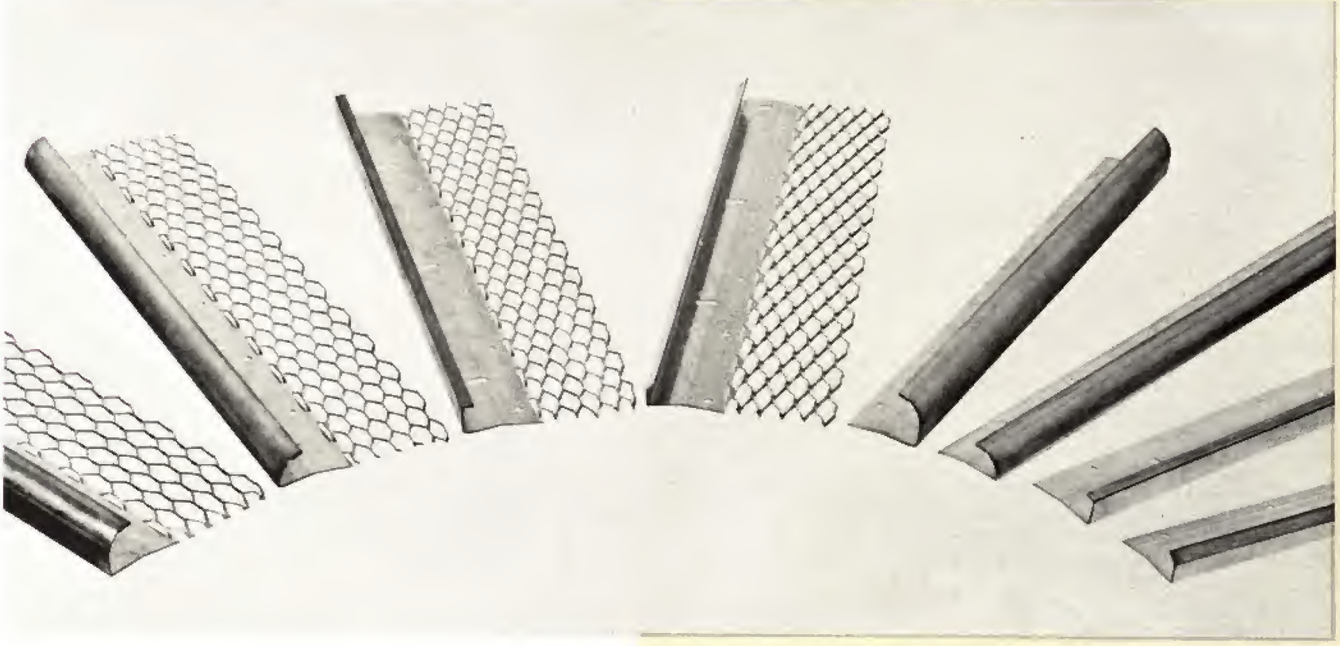
*T.M. Reg. U.S. Pat. Off.



USG CASING BEADS

USG Casing Beads are used as a plaster stop and as exposed trim around window and door openings.

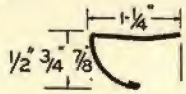
Casing Bead	Style	Flange	Gauge	Grounds
4	Quarter Rd.	Expanded	24	(½″, ¾)
138	Quarter Rd.	Short	24	(½″, ¾, ⅞)
60	Semi-Square	Expanded	24	(½″, ¾)
		Short	24	(½″, ¾, ⅞)
66	Square	Expanded	24	(½″, ¾)
		Short	24	(½″, ¾, ⅞)

All casings are furnished in 7′, 8′ and 10′ lengths of galvanized steel for use with metal lath, ROCKLATH or masonry construction.

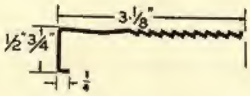
Caution—In order to insure proper grounds for plastering, ¾″ casing beads are recommended for use in conjunction with metal lath, clay tile or brick: ⅞″ casing beads are recommended *when the flange is applied under* ROCKLATH plaster base.

½″ casing beads are recommended *when flange is applied over* ROCKLATH.

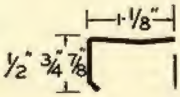
No. 138
QUARTER ROUND
(short flange type)



No. 66
SQUARE
(Expanded flange type)

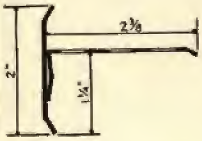


No. 60
SEMI-SQUARE
(Short flange type)



USG 2″ PARTITION TERMINAL

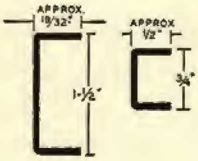
For use as a vertical parition terminal for 2″ solid metal lath or ROCKLATH partitions, or as a ceiling runner where 2″ partitions join an unplastered surface. Cap is formed of 18 gauge steel welded to a 24 gauge punched runner. Standard length 8′-2″ and prime coated.



USG LATHING CHANNELS

USG Lathing Channels are cold rolled from 16-gauge steel, black asphaltum painted; used for furring, suspended ceilings, partitions, and ornamental lathing.
Lengths: 16′ or 20′

Approx. Weights: ¾″—300 lbs. per M Lin. Ft.
1½″—514 lbs. per M Lin. Ft.
2″—625 lbs. per M Lin. Ft.



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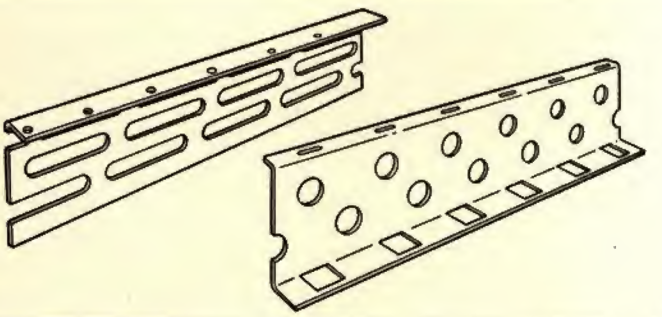
*Trademarks Reg. U. S. Pat. Off.

USG CEILING RUNNERS

L-Type—A specially designed ceiling runner providing top anchorage for studless metal lath or ROCKLATH solid plaster partitions.

Z-Type—A specially designed ceiling runner providing positive anchorage and alignment of ¾" channels in either solid partition construction or exterior wall furring.

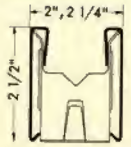


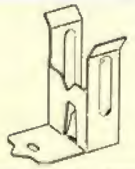
USG METAL BASE

A flush, metal base system consisting of a 2½" high face plate formed from 18-gauge steel, primed with a rust inhibitive paint, adaptable to all plaster partitions or furred exterior walls by the use of specially formed steel clips.

The cross section as designed provides a strong, rugged base. Substantial installation economies effected by the feature mounting snap-on application to the double base clip used in "2" solid plaster partition or to the single base clip and stud base clip used with hollow partitions or furred walls. See TRUSSTEEL Stud System for USG Metal Base attachment with Combination Stud Base Clips.

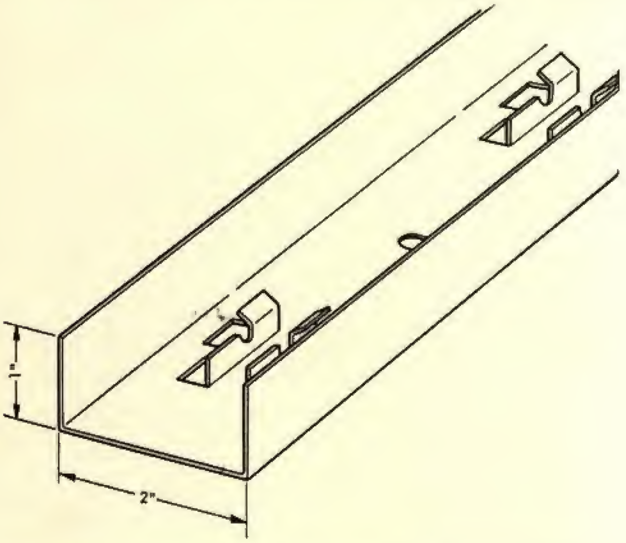
The face plates are easily notched and bent to form inside and outside corners, and are butted and spliced for continuous uninterrupted runs from one type of wall construction to another.





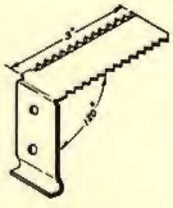
USG FLOOR RUNNER AND SCREED

A one-piece, channel-type combination floor runner and screed used to anchor 2" solid lath and plaster partitions to concrete floors with a minimum of labor. Can be cut with a hack saw or tin snips. Fastens to floor with concrete stub nails, rawl drives, or other suitable means. Base requires no grouting, except with studless metal lath partitions. One-inch legs provide an excellent ground establishing the 2" thickness of the partition. Designed to be covered with asphalt or rubber base. Fireproof and economical, it's made of 20-gauge cold rolled steel painted black. 10' lengths. Weight, 500 lbs. per 1,000 lineal feet. Packaged 100 lineal feet per bundle.



ADJUSTABLE WALL FURRING BRACKET

Made of 20 gauge galvanized steel with serrated edges for attaching ¾" furring channels to exterior masonry walls. Refer to pages 21 & 26 for additional data covering Exterior Wall Furring Systems.



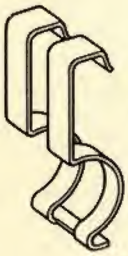
*T.M. Reg. U. S. Pat. Off.

FOR METAL LATH

Specially formed steel clips to provide a non-rigid, or floating attachment of metal lath or channels to the structural frame; affording:
1. Increased protection against plaster cracking due to structural movement.
2. Increased sound transmission loss. (See Data Table on pages 31 & 32.)

Resilient Clip No. 100

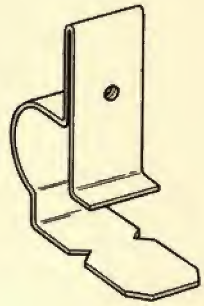
For resiliently attaching ¾″ cold rolled furring channels to 1½″ cold rolled runner channels in suspended ceiling construction. (No ratings for Sound Transmission Loss).



#100

Resilient Clip No. 200

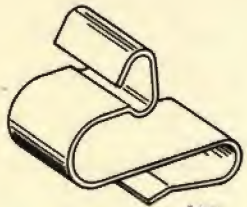
For wood studs or joists. Clips spaced not over 12″ o.c. for ceiling construction or 16″ o.c. for sidewalls.
Attached by nailing with 13-gauge, 1⅛″ lathing nails. Metal lath is floated ½ in. free of the framing members by wire tying to a ¼″ pencil rod, nested and tied to the inside of the tongue of the resilient clip.



#200

Resilient Clip No. 400

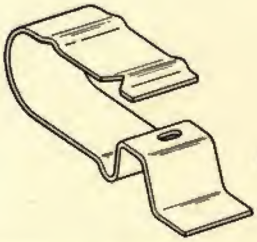
For TRUSSTEEL Studs. Snapped in place, 16″ o.c., over the outer flanges of the TRUSSTEEL Studs.
Metal lath is floated free of the steel studs by snapping pencil rod into the protruding tongue of the resilient clip.



#400

Resilient Clip No. 500

For masonry walls. Nailed in place over PYROBAR, or light weight concrete units, using 2″ staples or 10d cut nails driven into the mortar joints or solid sections of the units. Attached similarly to clay tile or brick by driving 10d cut nail into the mortar joint. Metal lath is resiliently furred out ⅞″ from the face of masonry by wire tying to ¾″ cold rolled channels wire tied inside the protruding tongue of the resilient clip.



#500

Spacing of Furring Channels—	12″	16″	19″	24″
Spacing of No. 500 Clips—	24″	18″	15″	12″

USG STEEL ACCESS PANELS

U.S.G. Steel Access Panels provide speedy and convenient access to key service points for plumbing, heating, electrical and air conditioning systems. They eliminate costly cutting into walls and ceilings for inspection and maintenance of equipment. Ideal, too, for turning enclosed areas into valuable extra storage space.

Adaptable—can be used with walls and ceilings of metal lath or gypsum lath and plaster; gypsum wallboard; or, other wall and ceiling construction materials.

Ready to install
- No cutting or sawing
- Made of steel: will not rot, warp, shrink or swell
- Fire-resistant
- Factory-coated with rust-inhibitive primer
- Fit snugly with finished surfaces
- Vermin-proof

Packed 2 to a carton, complete installation directions included. Four practical sizes: 8″x8″, 12″x12″, 14″x20″, and 22″x24″.

METAL LATH
TECHNICAL DATA

TYPES AND WEIGHTS OF METAL LATH AND SPACING OF SUPPORTS

Type of Lath	Weight	Type of Steel	Size Sheets	Maximum Allowable Spacings				
				Vertical Supports			Horizontal Supports	
					Metal			
	Per Square Yard			Wood	Solid Partitions	Others (5)	Wood or Concrete	Metal
Diamond Mesh	2.5 lb.	Copper Alloy (1)	27″x96″	16″	16″	12″	(4)	(4)
Diamond Mesh	3.4 lb.	Copper Alloy	27″x96″	16″	16″	16″	16″	13½″
Diamond Mesh	3.4 lb.	Galvanized (2)	27″x96″	16″	16″	16″	16″	13½″
⅛″ Z-Rib	2.75 lb.	Copper Alloy	27″x96″	16″	16″	16″	16″	12″
⅛″ Z-Rib	3.4 lb.	Copper Alloy	27″x96″	19″	24″	19″	19″	19″
⅜″ Rib	3.4 lb.	Copper Alloy	27″x96″	24″		24″	24″	24″
⅜″ Rib	4.0 lb.	Copper Alloy	27″x96″	24″		24″	24″	24″
Stuccomesh (3)	1.8 lb.	Copper Alloy	48″x99″	16″ (3)				
Stuccomesh	3.6 lb.	Copper Alloy	48″x99″	16″ (3)				
¾″ Riblath	Per Sq. Ft. 0.60 lb.	Copper Alloy	2′x8′— 10′ & 12′					
	0.75 lb.	Copper Alloy						

All metal lath (except galvanized) is painted with a rust-inhibitive black asphaltum paint.

Notes (1) Copper alloy lath contains from 0.2% to 0.25% pure copper.
(2) Galvanized lath is cut from galvanized steel.
(3) Stuccomesh generally applied over exterior sheathing.
(4) Not recommended, except for fireproofing of steel shapes.
(5) Including vertical furring.

SIZE AND SPACING OF HANGERS

Size and Type	Maximum Ceiling Area Supported Per Hanger	Maximum Center to Center Spacing of Hangers
No. 9 Gauge Galvanized Wire	12½ sq. ft.	4 ft. x 3 ft.; 3½ ft. x 3½ ft.
No. 8 Gauge Galvanized Wire	16 sq. ft.	4 ft. x 4 ft.; 5 ft. x 3 ft.
3/16″ Mild Steel Rod (1) (2)	25 sq. ft.	6 ft. x 4 ft.; 7 ft. x 3½ ft.; 8 ft. x 3 ft.
¼″ Mild Steel Rod (1) (2)		
3/16″ x 1″ Mild Steel Flat (1) (2)		

(1) Galvanized Rods and Rust Inhibitive painted or Galvanized Straps recommended where severe moisture conditions may occur
(2) See Note 2 below.

SIZE AND SPACING OF MAIN RUNNERS

Size and Type	Approx. wt. per 1000 lineal feet	Maximum Spacing of Hangers along Runners	Center to Center Spacing of Runners
1½″ Cold Rolled Channel	514 lbs.	4 ft.	Up to 4 ft.
1½″ Hot Rolled Channel (2)	1120 lbs.	5 ft.	Up to 4 ft.
2″ Cold Rolled Channel	625 lbs.	5 ft.	Up to 4 ft.
2″ Hot Rolled Channel (2)	1260 lbs.	6 ft.	Up to 4 ft.
2½″ Hot Rolled Channel (2)	1500 lbs.	7 ft.	Up to 3½ ft.
2½″ Hot Rolled Channel (2)	2270 lbs.	8 ft.	Up to 3 ft.

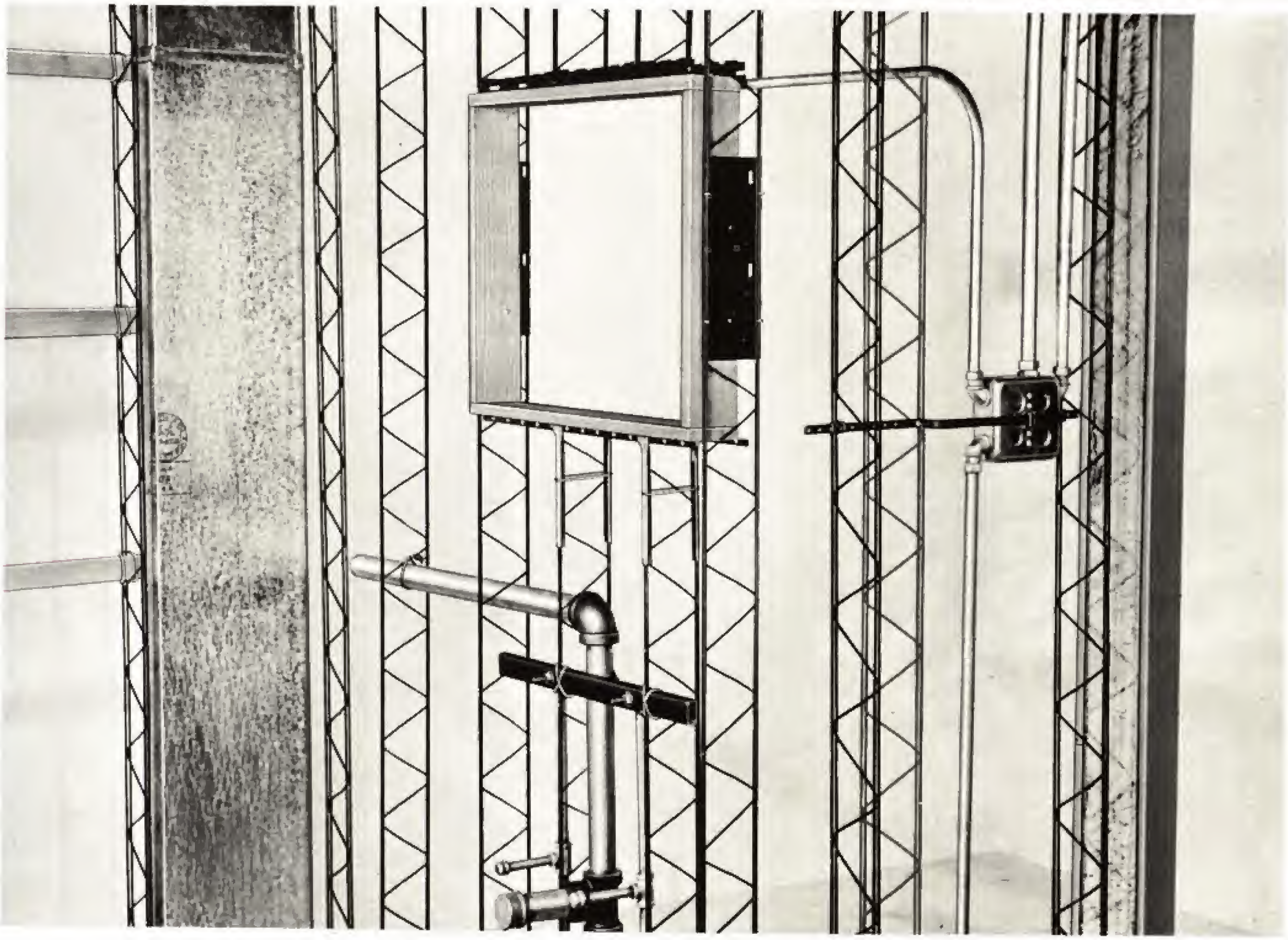
(2) Not manufactured or supplied by United States Gypsum Company.

SIZE AND SPACING OF FURRING MEMBERS

Spacing of Supports	Size	Approx. wt./1000 ft.	Maximum Spacing
3′–0″	¾″ Channel	300 lbs.	24″
3′–6″	¾″ Channel	300 lbs.	19″
4′–0″	¾″ Channel	300 lbs.	16″

*T.M. Reg. U.S. Pat. Off.

TRUSSTEEL* STUD SYSTEMS



DESCRIPTION

The TRUSSTEEL Stud is the original open truss design stud for the erection of hollow, non-load bearing, fire-resistant partitions. The stud is formed of number 7 gauge steel wire rods, with a continuous diagonal wire web welded to double wire flanges. Fabricated in five stud widths; 1⅝", 2½", 3¼", 4" and 6"; and mill cut to job lengths. This engineered stud, together with its accessories, provides a frame work for easy direct or resilient attachment of metal lath or ROCKLATH Plaster Bases.

FUNCTION AND UTILITY

The TRUSSTEEL Stud open web wire design provides maximum free space for encasement of pipes, conduits or ducts, horizontally, vertically or diagonally, without imparing the partition construction or strength. Web members may be cut easily to accommodate larger ducts or pipes.

Sound Insulation

TRUSSTEEL Stud Partition systems provide an economical and practical solution to sound transmission problems. The following ratings are based on recognized laboratory tests:

(a) Metal Lath and Plaster, from 40db to 46db
(b) ROCKLATH and Plaster, 44db to 48db.
(c) Staggered Steel Studs—Lath and Plaster, 52db.
(d) Resiliently attached Metal Lath, 55db.
(e) Resiliently attached ROCKLATH, 51 db.

Note: Above Sound Transmission Loss ratings will vary depending on stud spacing, type of plaster aggregate and the proportioning of aggregate to plaster. Generally, sand aggregate provides greater sound insulation than lightweight aggregates. (See Technical Data—Page 32.)

Fire-Protection

Incombustible components, provide fire ratings of 1 and 2 hours depending on stud spacing, plaster base and plaster aggregate combinations. (See Technical Data—Pages 31 & 32.)

Economical

Comparable to conventional wood frame, lath and plaster construction in assembly and unit costs.

Savings are possible in structural framing due to reduced dead loads over solid partitions of comparable width.

Mechanical trades reduce labor costs through ease of installation.

(continued page 14)

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*T.M. Reg. U.S. Pat. Off.

TRUSSTEEL
STUD SYSTEMS

Strength

The TRUSSTEEL Studs, tested in accordance with Corps of Engineers Specification CE-240 (INT) for flexure under beam loading, complies with the established requirements for deflection.

The TRUSSTEEL Stud ROCKLATH partition tested for approval by the Board of Standards and Appeals, New York City, successfully met the requirements for resistance to impact loads. In this test a 360 ft. lb. load was applied at the center of a partition 12′-0″ high x 28′-8″ long and constructed of 2½″ TRUSSTEEL Studs, with ⅜″ ROCKLATH Plaster Base and ½″ gypsum plaster each side.

Performance

Nationally accepted and used in schools, hospitals, shopping centers, office buildings, apartments, dormitories and hotels as a functional, economical and practical partition. The TRUSSTEEL Stud was engineered, designed and placed in production as a construction material by U.S.G. in 1933. Attachment systems for ROCKLATH, developed to provide further economy, have been nationally accepted, specified and used on thousands of commercial structures.

LIMITATIONS

1. A non-load bearing partition construction.
2. Stud spacing limited to 16 inch maximum for ⅜″ ROCKLATH and up to 24 inch maximum for metal lath depending on type of lath selected.
3. Steel Door Frames.
   (1) Frame anchorage to the floor shall be by two power driven attachments, or equal, for each jamb. The floor anchors shall be welded to the frame in a manner that provides rigidity to the frame at the floor line. (One suggested method is shown and detailed—see Page 22.)
   (2) Flange returns must be rigid to control chip cracking due to vibration. Flange returns welded to a minimum of four jamb anchors and grouting the frame with gypsum mortar will minimize vibration.
   (3) Frame should be fabricated of not less than 16 gauge metal.
   (4) Lath and plaster should key into the frame and not terminate against the metal return.
   (5) Diagonal reinforcement, 12″ x 18″ 2.5 lb. self-furring diamond mesh metal lath, should be applied at door frame corners.
   (6) Long length (16″ x 96″) ROCKLATH Plaster Base is recommended over door frames to eliminate butt joints.
   (7) Adequate anchorage of the TRUSSTEEL Studs over the door head is necessary. Use of ¾″ channel bracing installed horizontally over the door and tied to all studs within 24″ each side of the frame is recommended.
   (8) To retain maximum sound isolation, the integrity of the partition or ceiling should not be voided by openings such as electrical outlets, medicine cabinets, vents, etc. so as to create sound leaks.

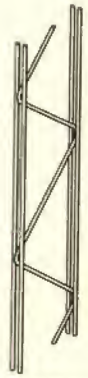
Where mechanically suspended acoustical tile ceilings are used partitions should extend from structural slab to structural slab, closing all openings.

When sound isolation is a serious consideration use *sand* aggregate *only*, *do not* use lightweight aggregates.

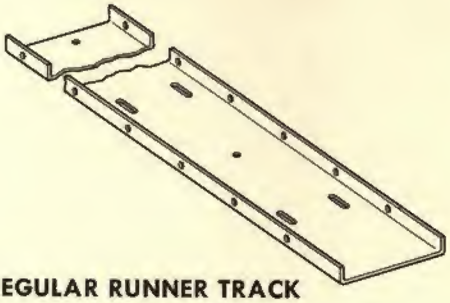
PARTITION THICKNESS—Normal Plaster Grounds

Stud Width	ROCKLATH and Plaster or ⅜″ Riblath and Plaster	Diamond Mesh or ⅛″ Riblath and Plaster	Resilient ROCKLATH & Plaster	Resilient Metal Lath & Plaster	Maximum Partition Heights (1)			
					ROCKLATH	Metal Lath		
					Studs 16″ o.c.	Studs 24″ o.c.	Studs 19″ o.c.	Studs 16″ o.c.
1⅝ in.	3⅝ in.	3⅜ in.	4⅝ in.	4⅜ in.	9′	—	—	9′
2½ in.	4½ in.	4 in.	5¼ in.	5 in.	15′	9′	14′	15′
3¼ in.	5¼ in.	4¾ in.	6 in.	5¾ in.	21′	13′	18′	21′
4 in.	6 in.	5½ in.	6¾ in.	6½ in.	22′	16′	20′	22′
6 in.	8 in.	7½ in.	8¾ in.	8½ in.	26′	20′	24′	26′

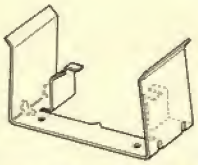
(1) Maximums based on rigid lateral restraint (i.e., plaster ceiling—partition intersection) at limiting height, and are limited by structural adequacy rather than flexibility compared to other partition types.



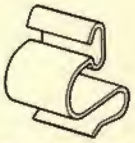
(A) TRUSSTEEL STUD



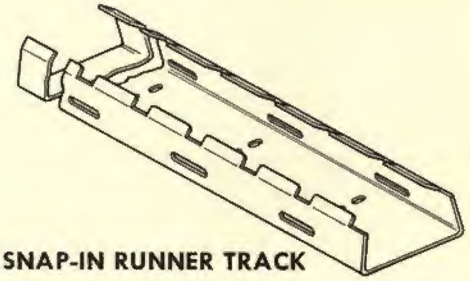
(B) REGULAR RUNNER TRACK



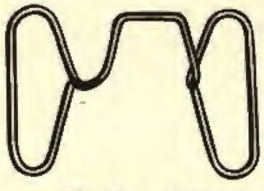
(D) COMBINATION STUD BASE CLIP



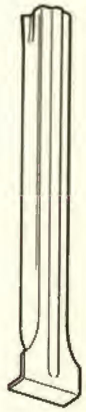
(E) #400 RESILIENT CLIP



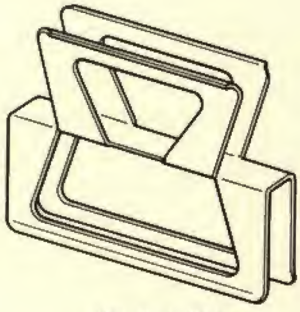
(C) SNAP-IN RUNNER TRACK



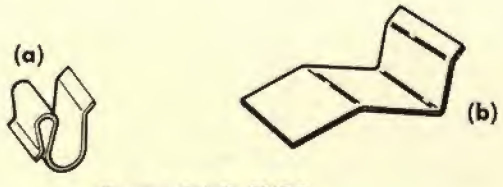
(H) TL-1 CLIP



(F) STUD SHOE



(G) B-1 CLIP



(I) STARTER CLIPS

A: Trussteel Studs are available in five stud widths; 1⅝", 2½", 3¼", 4" and 6", and cut to job lengths.

B: Regular runner track for use in anchoring the Trussteel Stud partition to floor and ceiling using Trussteel Stud shoes.

C: Snap-In Runner Track for use in anchoring the Trussteel Stud partition to the floor by eliminating stud shoes. Attachment of stud is by a snap-in feature. May be used as ceiling runner when partition requires no fire rating. This procedure requires accurate cutting of studs to length on the job. Available for 1⅝", 2½", 3¼" and 4" Trussteel Studs.

D: Combination Stud Base Clip performs three functions—attaches Trussteel Stud to floor—provides attachment of 2½" metal base to Trussteel Stud partitions—provides a builtin starter clip for gypsum plaster-bases. Has the snap-in feature of snap-in runner and snap-on feature of double base clips. Available for 1⅝", 2½", 3¼" and 4" Trussteel Studs.

E: #400 Resilient Clip specially formed to provide a non-rigid or floating attachment of lath to Trussteel Studs. Guards against cracking of plaster and reduces sound transmission. See technical data, page 32.

F: Trussteel Stud shoes are used for connecting stud to regular runner track and permit up to a 4" adjustment.

G: B-1 Bridjoint Field Clip to support the end joints of ⅜" Rocklath Plaster Base.

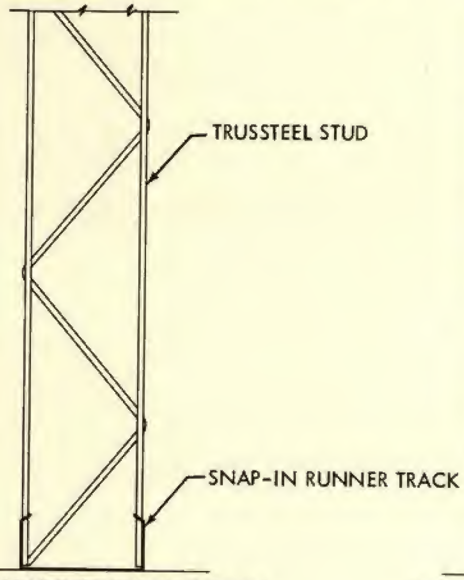
H: TL-1 Trus-Lok Field Clip for attaching ⅜" Rocklath Plaster Base to Trussteel Studs.

I: Starter Clips **a:** TL-2 Starter Clip used in conjunction with the TL-1 clips to attach the bottom edge of the first course of Rocklath Plaster Base to Trussteel Studs.

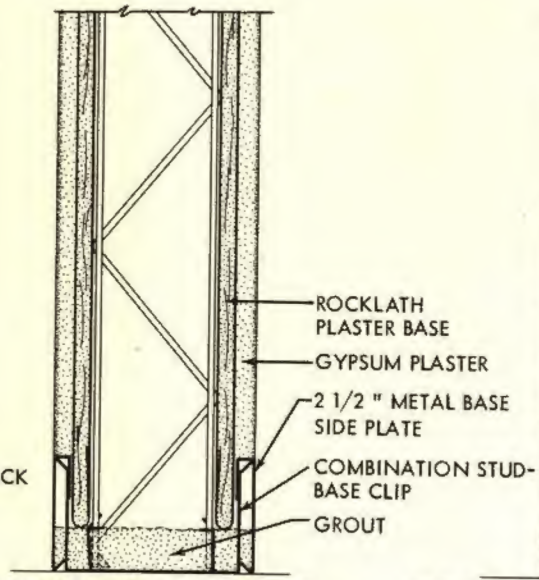
b: "Drive-In" Starter Clip for use in attaching lower edge of Rocklath Plaster Base in Trussteel stud partitions.

FLOOR ATTACHMENT DETAILS

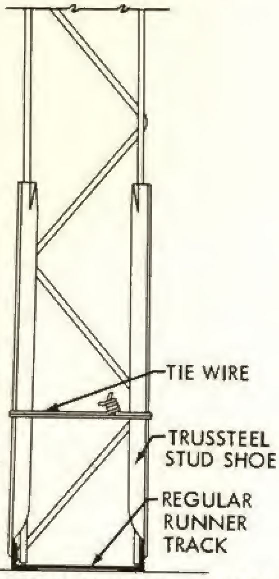
Scale: 3″ = 1′—0″



SNAP-IN RUNNER TRACK & STUD

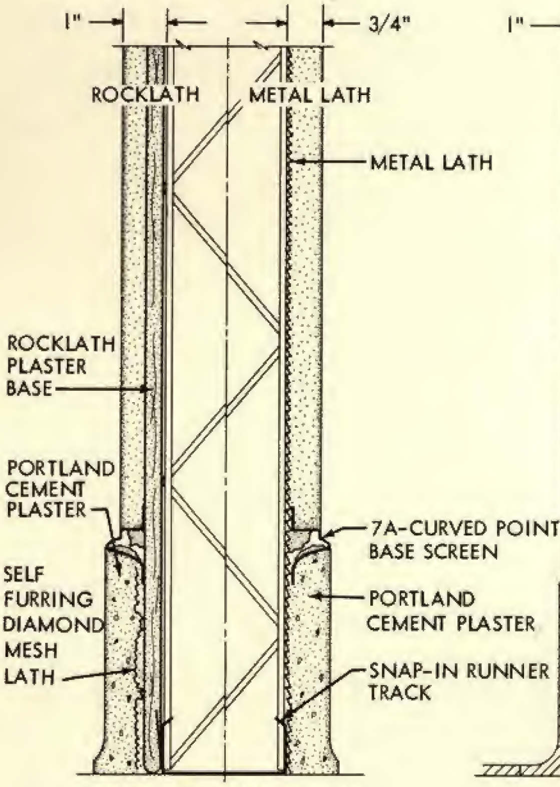


COMBINATION STUD BASE CLIP

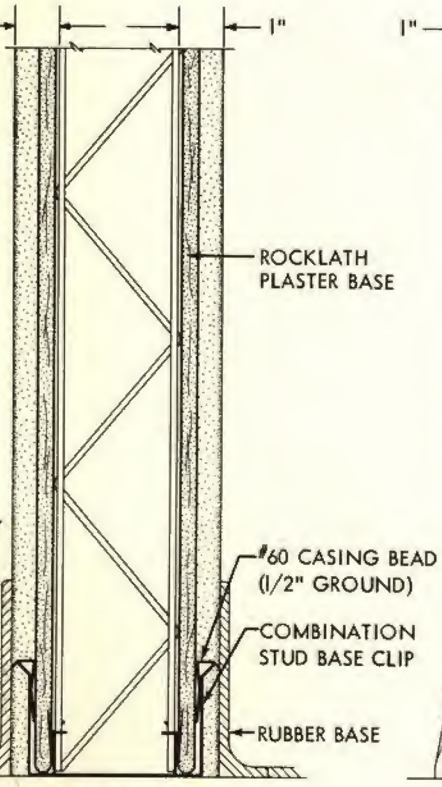


REGULAR RUNNER TRACK AND SHOES

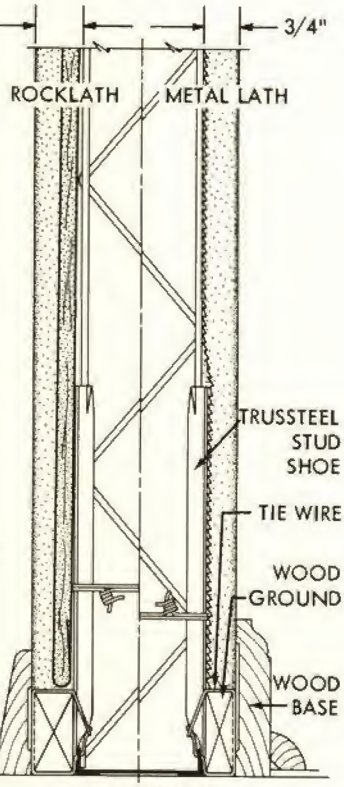
BASE DETAILS



PORTLAND CEMENT BASE



RUBBER BASE



WOOD BASE

CEILING ATTACHMENTS

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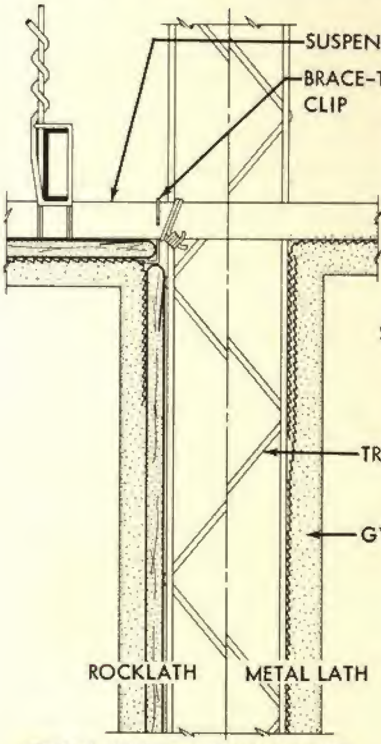
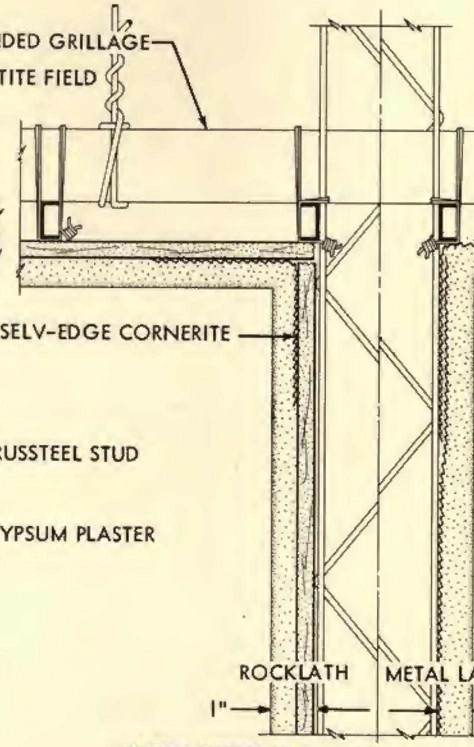
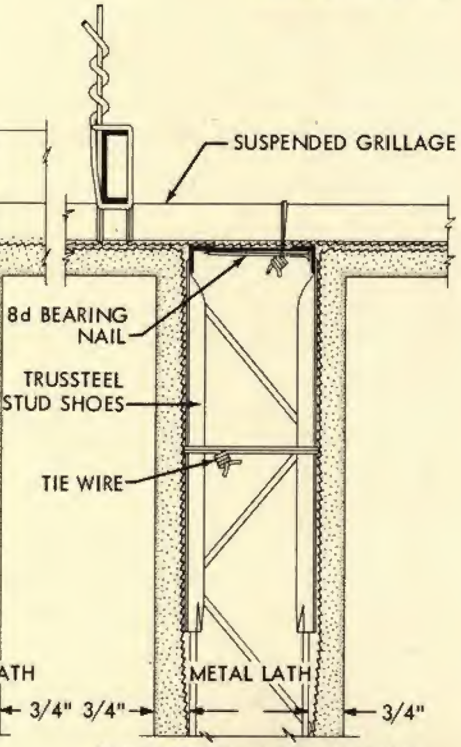


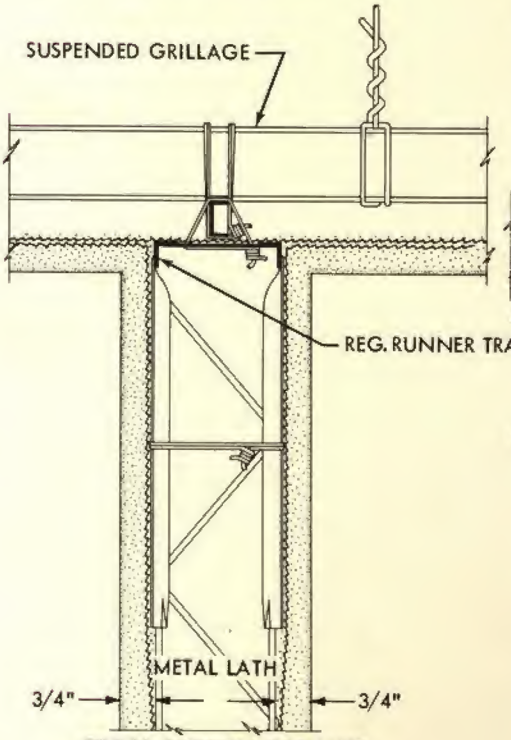
CROSS SECTION TRANSVERSE TO FURRING CHANNEL



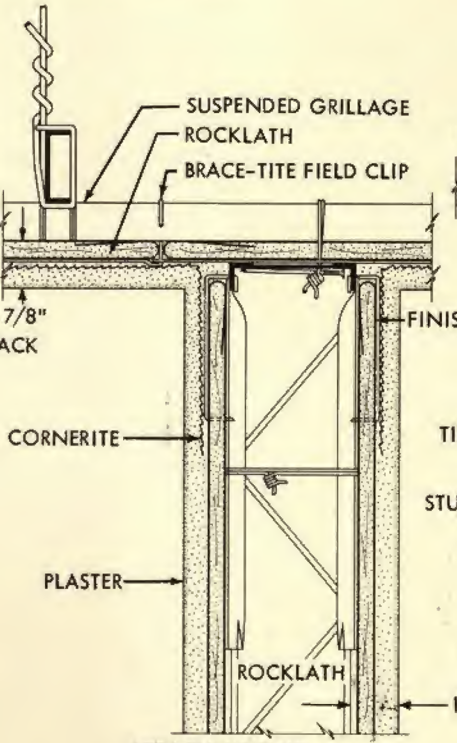
CROSS SECTION PARALLEL TO FURRING CHANNEL



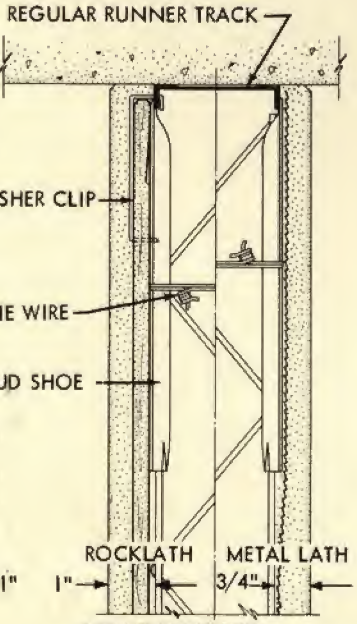
CROSS SECTION TRANSVERSE TO FURRING CHANNEL



CROSS SECTION PARALLEL TO FURRING CHANNEL



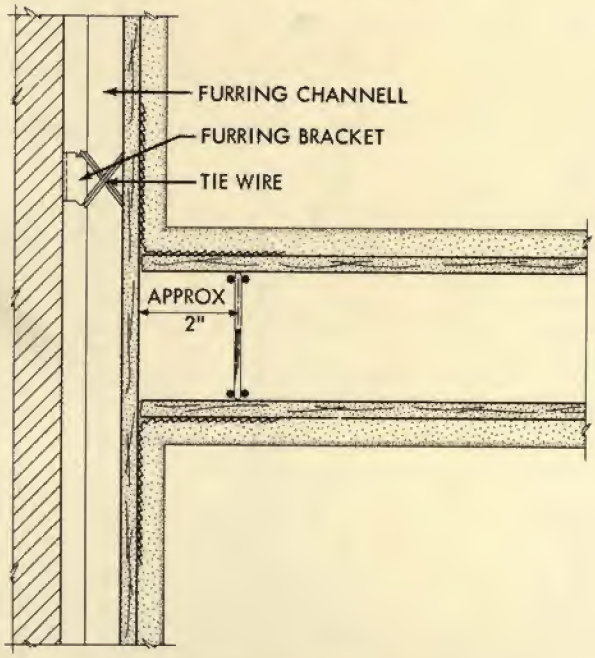
ATTACHMENT TO SUSPENDING CEILING



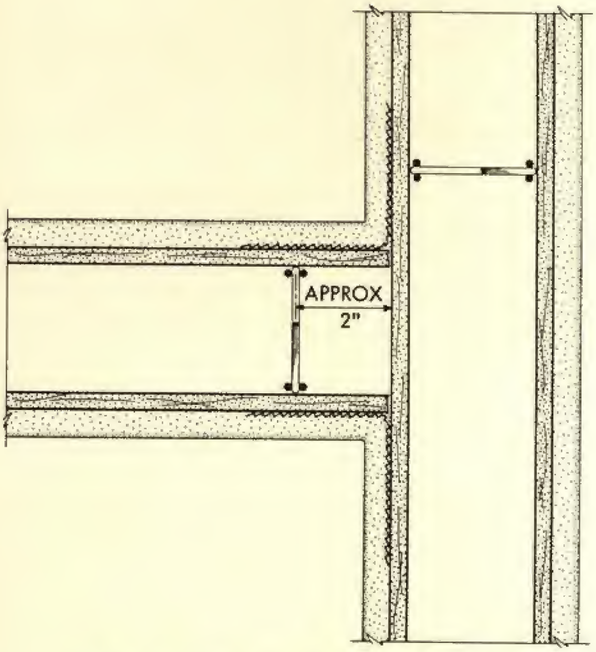
ATTACHMENT TO CONCRETE CEILING SLAB

INTERSECTING PARTITIONS

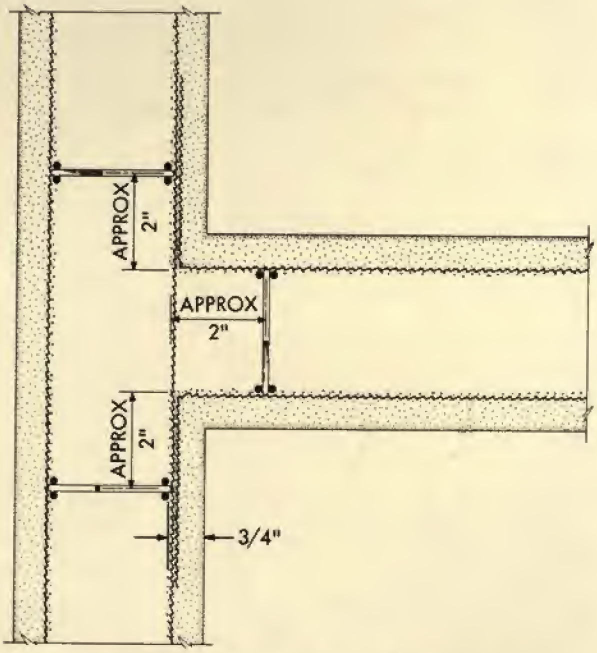
Scale: 3″ = 1′—0″



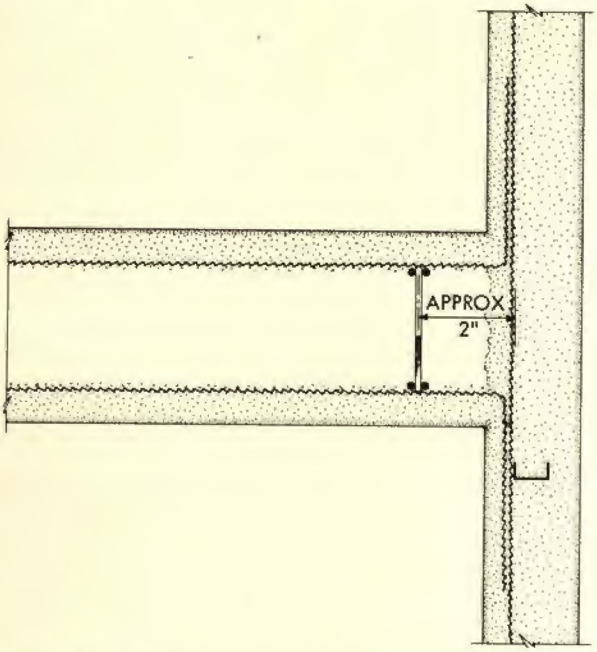
FURRED EXTERIOR WALL



INTERSECTING TRUSSTEEL STUD, ROCKLATH



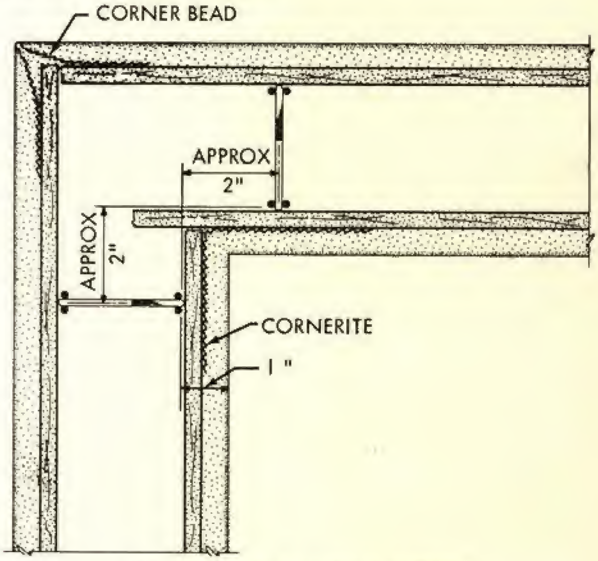
INTERSECTING TRUSSTEEL STUD METAL LATH



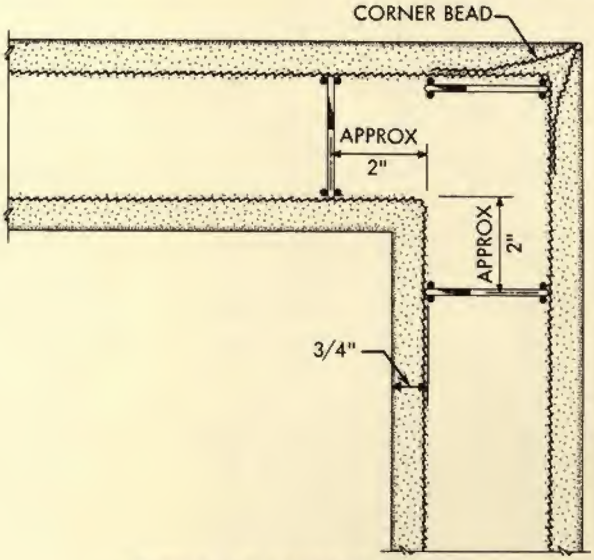
SOLID-METAL LATH & PLASTER PARTITION

CORNER DETAILS

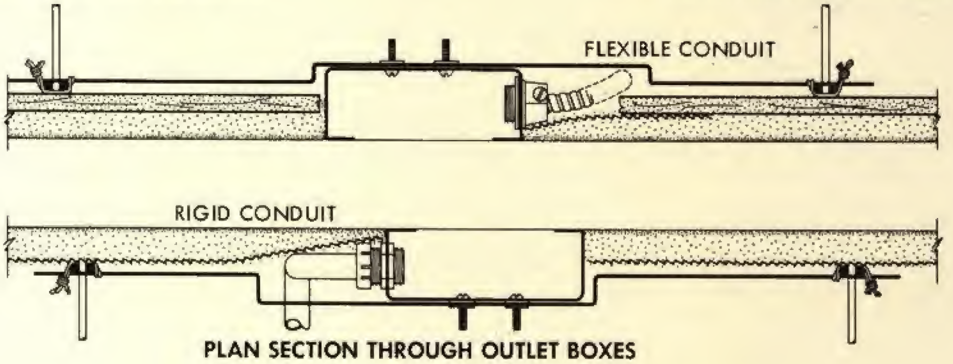
Scale: 3" = 1'—"0



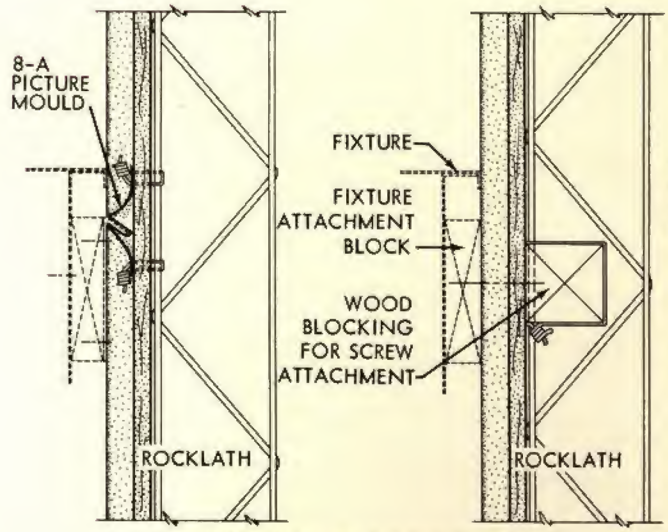
INTERNAL OR EXTERNAL CORNER
TRUSSTEEL STUD, ROCKLATH



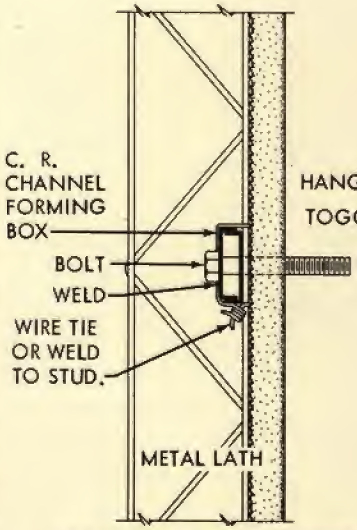
INTERNAL OR EXTERNAL CORNER
TRUSSTEEL STUD, METAL LATH



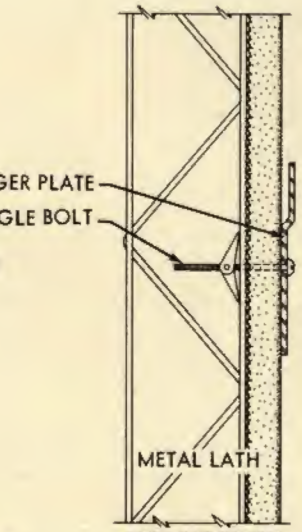
PLAN SECTION THROUGH OUTLET BOXES



LIGHT FIXTURE ATTACHMENTS



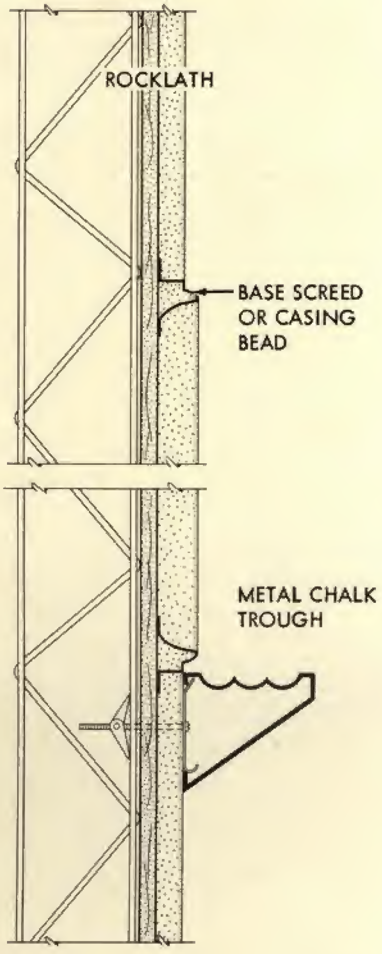
HEAVY FIXTURE ATTACHMENT



LIGHT FIXTURE
ATTACHMENT

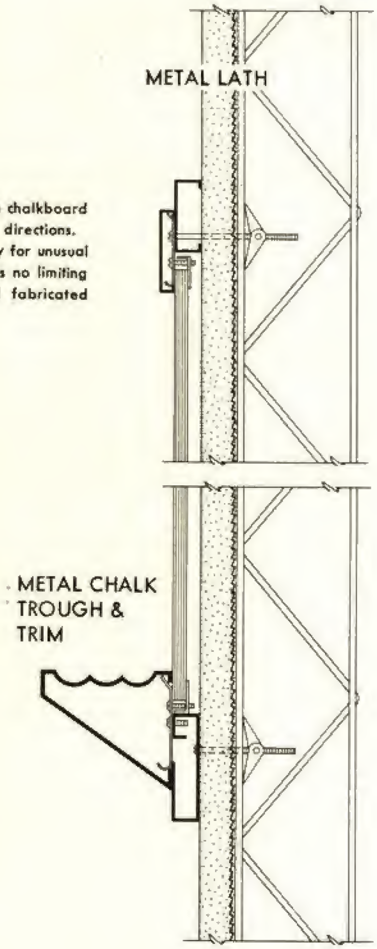
CHALKBOARD DETAILS

Scale: 3″ = 1′—0″

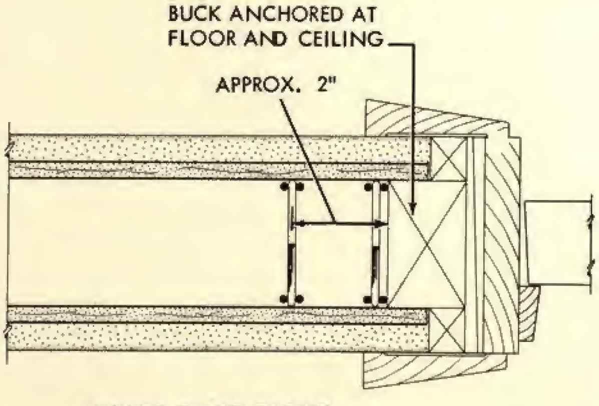


CHALKBOARD

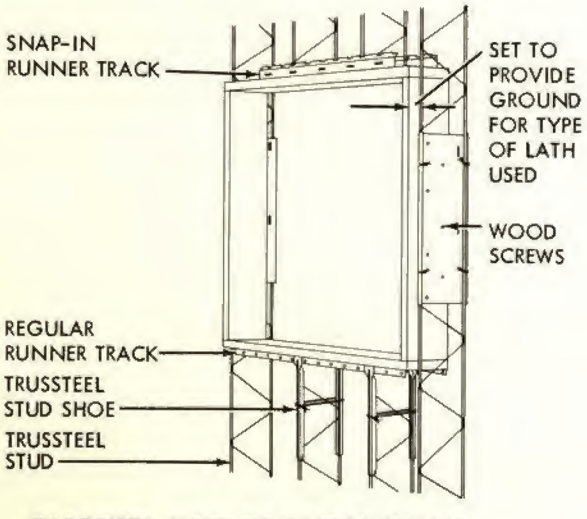
The chalkboard details shown here are typical. Consult the chalkboard manufacturer's printed directions for specific installation directions. **Plaster Chalkboard** (detailed at left) offers opportunity for unusual application. Entire walls can be chalkboard since there is no limiting sheet size. Maintenance is comparable to conventional fabricated boards. (See specifications pages 36 and 37).



MISCELLANEOUS DETAILS



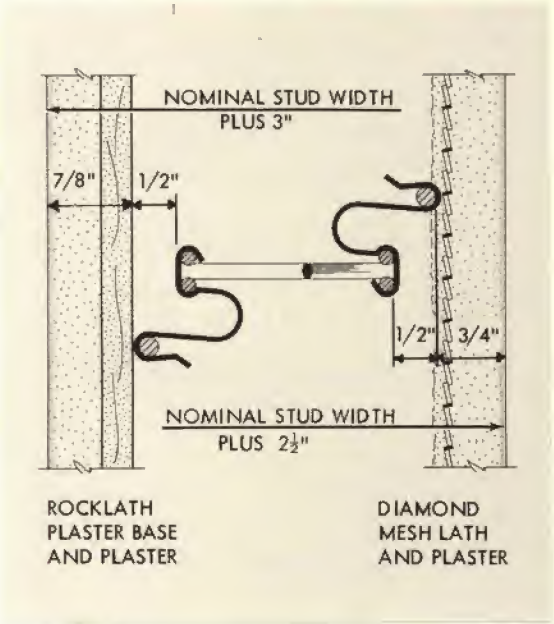
WOOD DOOR FRAME

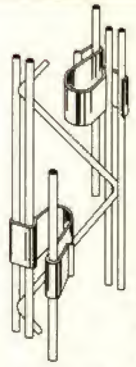


BARROWED LIGHT OR CABINET FRAME

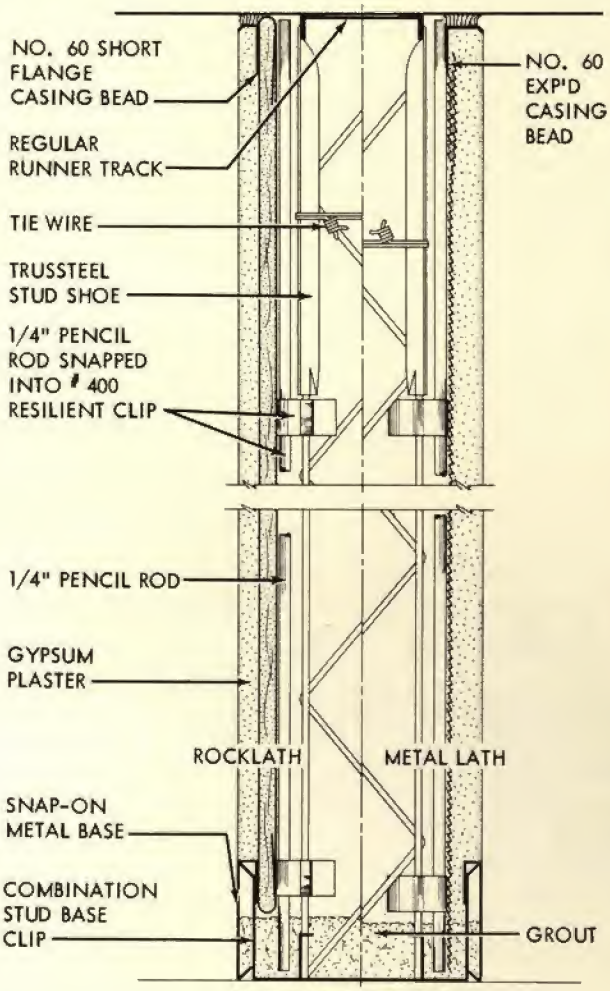
RESILIENT ATTACHMENT OF ROCKLATH & METAL LATH

Scale: 3″ = 1′—0″


NOMINAL STUD WIDTH PLUS 3"
7/8"
1/2"
1/2"
3/4"
NOMINAL STUD WIDTH PLUS 2½"
ROCKLATH PLASTER BASE AND PLASTER
DIAMOND MESH LATH AND PLASTER



TRUSSTEEL STUD WITH # 400 CLIPS AND PENCIL RODS



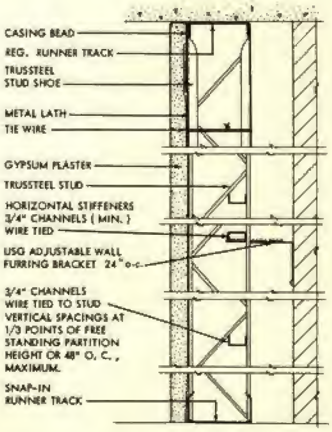
RESILIENT BASE DETAIL

EXTERIOR WALL FURRING WITH STUDS

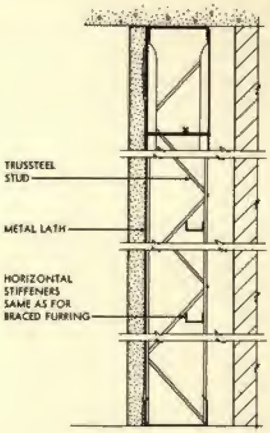
Heights of Metal Lath or ROCKLATH And TRUSSTEEL Stud Vertical Furring (Maximum)

TRUSSTEEL Stud (size)	Height without Attachment
1⅝″	6′
2½″	10′
3¼″	14′
4″	15′
6″	17′

NOTE: Maximum heights without attachment is based on stud spaced 16″ o.c., and plastered one side. Attachment can occur at the ceiling or the backing wall as shown in the Braced Furring Detail.


CASING BEAD
REG. RUNNER TRACK
TRUSSTEEL STUD SHOE
METAL LATH
TIE WIRE
GYPSUM PLASTER
TRUSSTEEL STUD
HORIZONTAL STIFFENERS 3/4" CHANNELS (MIN.) WIRE TIED
USG ADJUSTABLE WALL FURRING BRACKET 24" o-c.
3/4" CHANNELS WIRE TIED TO STUD VERTICAL SPACINGS AT 1/3 POINTS OF FREE STANDING PARTITION HEIGHT OR 48" O. C., MAXIMUM.
SNAP-IN RUNNER TRACK

BRACED FURRING



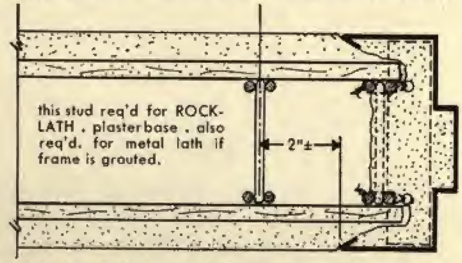
FREE STANDING FURRING

METAL DOOR FRAMES

Jamb Anchor inserts should be notched according to size of stud and welded in the frame as shown in the detail.

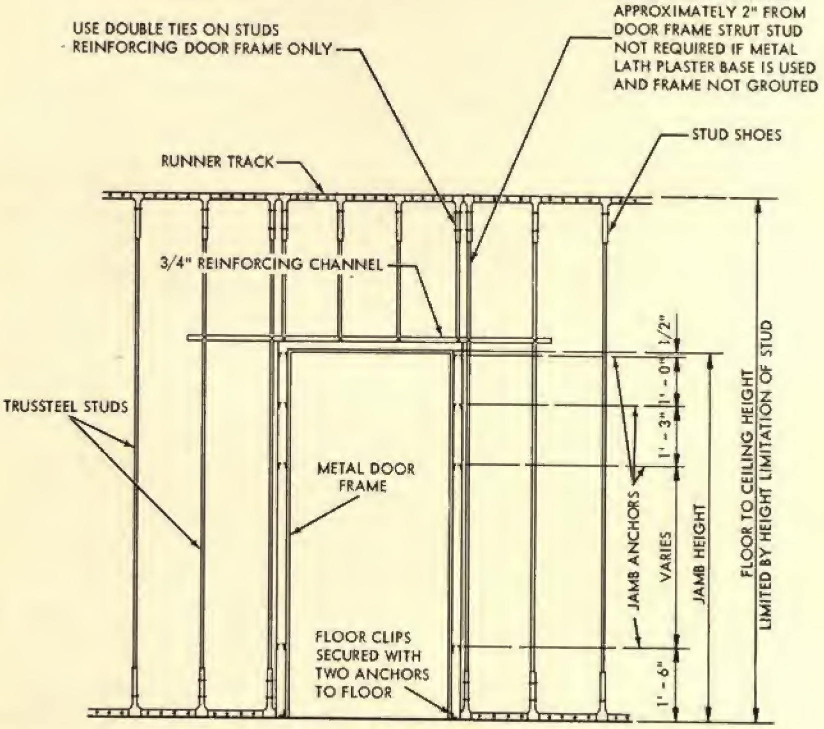
Grouting of the frame, after installation of the jamb stud, is recommended. If grouting is not specified it is important that jamb anchor inserts be welded to the jamb face and flange returns, in the case of reveal type frames; or to the flanges, in the case of flush type frames, and the space between lath and frame flanges be completely filled with basecoat plaster, to avoid movement of the frame.

To prevent frame rotation, it is recommended that the floor clips, be welded to the back of jamb face and to the flange returns, or that they be welded between the flanges, and then secured to the floor with two spaced anchors. Anchor insert clips if inverted will serve as floor clips.


this stud req'd for ROCK-LATH . plasterbase . also req'd. for metal lath if frame is grouted.
2"±

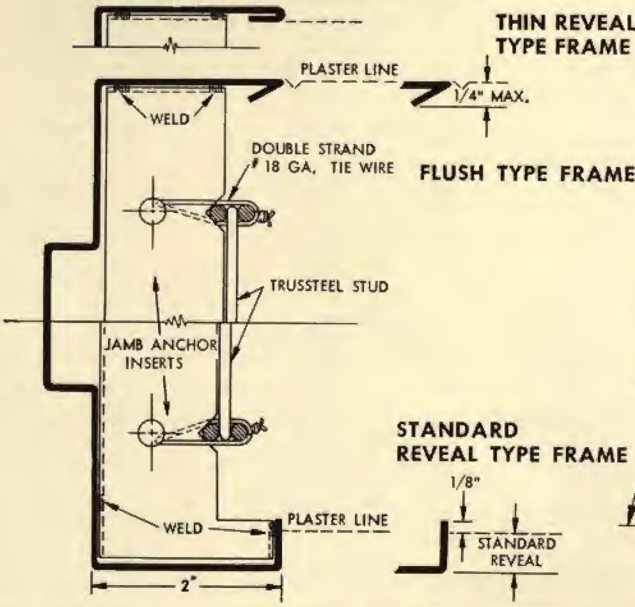
METAL DOOR FRAME / 3" = 1'-0"
showing line of recommended grouting raked out along side of jamb anchor stud to permit lath & plaster to enter frame if grouting is not specified, lath should carry well into frame and plaster forced beyond flange return.

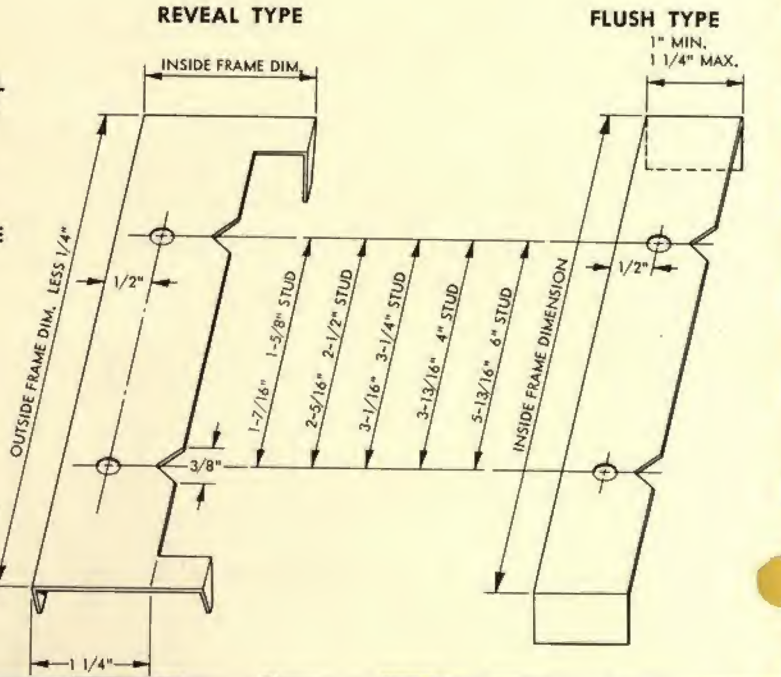
DETAILS Scale / as noted


USE DOUBLE TIES ON STUDS REINFORCING DOOR FRAME ONLY
SECOND STUD LOCATED APPROXIMATELY 2" FROM DOOR FRAME STRUT STUD NOT REQUIRED IF METAL LATH PLASTER BASE IS USED AND FRAME NOT GROUTED
STUD SHOES
RUNNER TRACK
3/4" REINFORCING CHANNEL
TRUSSTEEL STUDS
METAL DOOR FRAME
FLOOR CLIPS SECURED WITH TWO ANCHORS TO FLOOR
1/2"
1'-0"
1'-3"
JAMB ANCHORS
VARIES
1'-6"
JAMB HEIGHT
FLOOR TO CEILING HEIGHT LIMITED BY HEIGHT LIMITATION OF STUD

WALL ELEVATION

JAMB ANCHOR INSERTS / half size





*T.M. Reg. U.S. Pat. Off.

SOLID PLASTER PARTITIONS

DESCRIPTION

The solid partition is a monolithic plaster construction adaptable to non-load bearing requirements with a minimum thickness of 1½ inches for metal lath and 2 inches for ROCKLATH. It is flexible in that additional strength, rigidity, and greater fire protection can be gained by increasing the plaster thickness.

Solid plaster partitions consist primarily of a metal lath or ROCKLATH curtain to which gypsum basecoats and finish plasters are applied to established grounds. Solid partitions with metal lath or ROCKLATH plaster bases are anchored at floor and ceiling and are temporarily braced during the plastering operation. Solid partitions with metal lath plaster base may be studless or have ¾″ channel studs.

FUNCTION AND UTILITY

Economical:

1. The solid plaster partition saves space and costly floor area.
2. The solid plaster partitions are accepted as the most economical fire resistant plaster partition assemblies.
3. In structural design the dead load for 2 inch partitions will vary from 9 lbs. to 18 lbs. per sq. ft. depending on the type of plaster and aggregate used. Dead loads can be estimated at 18 lbs. per sq. ft. of partition with sanded gypsum plaster over metal lath, 9 lbs. with gypsum perlite over ROCKLATH.

Fire-Protection—Constructed of incombustible components, solid plaster partitions constructed as specified have established fire ratings of one hour for two inch and two hours for 2½ inch thickness. (See Technical Data—Pages 31 & 32.)

Strength—Impact tests with a 240 ft. load concentrated at the center of a 2″ x 8′–0″ x 16′–0″ panel failed to produce discernable cracking. Additional strength and rigidity are gained by increasing the partition thickness.

Sound Insulation—Sound Transmission Losses of 36 to 39 decibels for the 2 inch partition are usually considered adequate for dividing spaces. Increased sound transmission loss is obtained by increasing the partition thickness. (See Technical Data—Pages 31 & 32.)

Performance—Nationally accepted and used in schools, apartments and hotels as a functional and economical partition construction. Most major apartment house projects have used these assemblies with low maintenance costs and excellent performance.

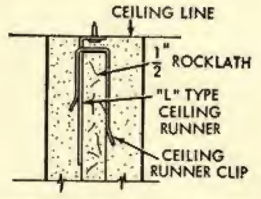
LIMITATIONS

1. Non-load bearing partitions only.
2. Limiting height is 10′-0″ for partitions with ROCKLATH Plaster Base, 12′-0″ for Metal Lath.
3. Steel door frames and metal bases must be grouted with gypsum mortar.
4. Two inch partitions like all other partition constructions should be isolated from reinforced concrete framing columns and beams. The partition will not resist stresses transmitted to it by movement or deflection of the structural components of the building.

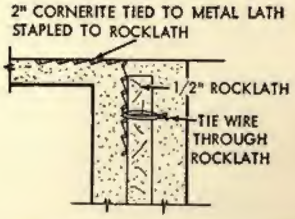
• please turn page for additional details

SOLID ROCKLATH & PLASTER PARTITIONS DETAILS / 3″=1′–0″

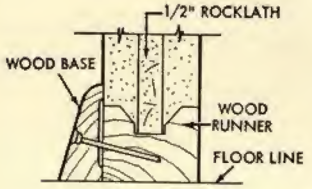
ROCKLATH plaster partition ceiling detail



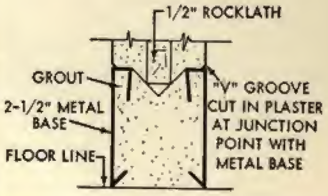
ROCKLATH plaster partition ceiling detail


2" CORNERITE TIED TO METAL LATH STAPLED TO ROCKLATH
1/2" ROCKLATH
TIE WIRE THROUGH ROCKLATH

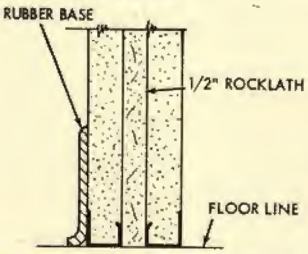
ROCKLATH plaster partition wood floor runner detail



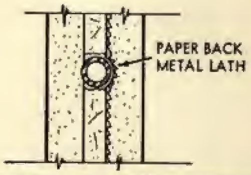
ROCKLATH plaster partition 2½″ metal base detail



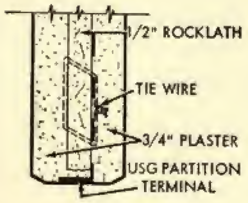
USG floor runner



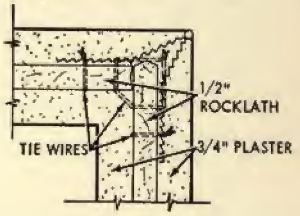
rigid conduit



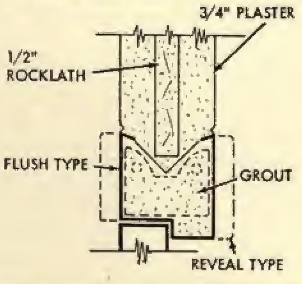
metal partition end



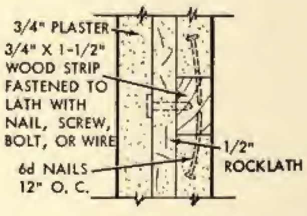
partition corner



metal door frame



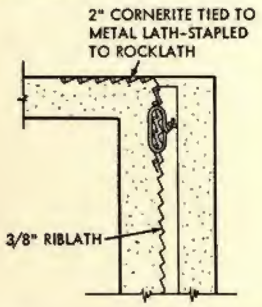
cabinet and shielding attachment


3/4" PLASTER
3/4" X 1-1/2" WOOD STRIP FASTENED TO LATH WITH NAIL, SCREW, BOLT, OR WIRE
6d NAILS 12" O. C.
1/2" ROCKLATH

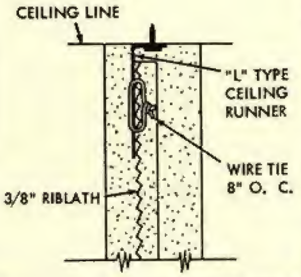
DETAILS/scale 3″=1′−0″

⅜″ riblath-plaster solid partition

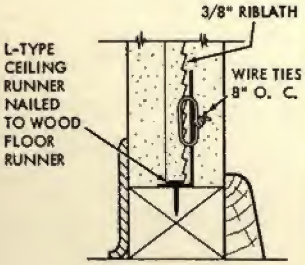
ceiling



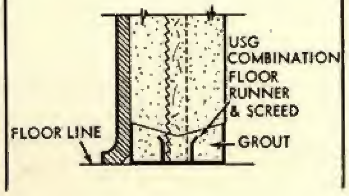
ceiling



wood base runner

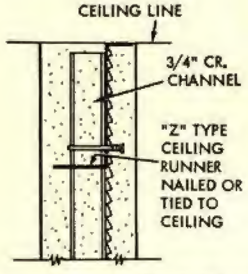


⅜″ riblath plaster partition with combination floor runner & screed

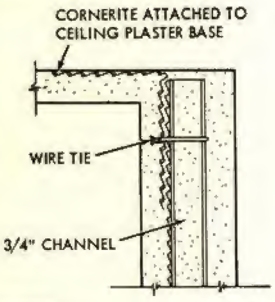


metal lath channel stud solid partition

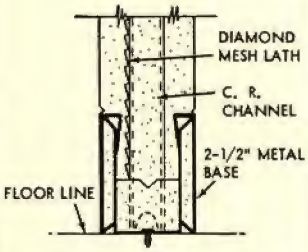
ceiling
diamond mesh lath



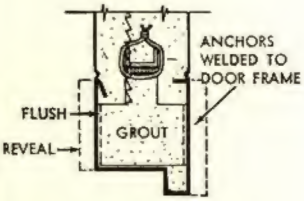
ceiling



double base clip



channel stud



CORE WALLS

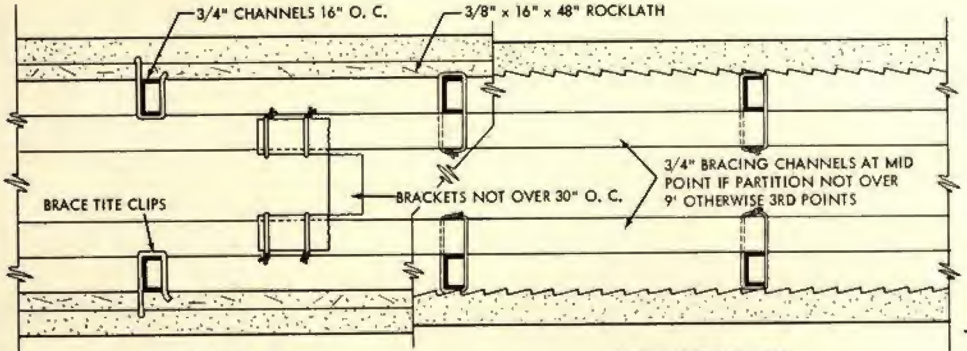
DETAILS/scale as noted

The core wall is a versatile partition construction used in conjunction with solid partition systems to provide a pipe space for mechanical installations. Core walls, consisting of channel studs and either ROCKLATH ⅜″ x 16″ x 48″ or metal lath plaster bases may be designed to provide variable core widths.

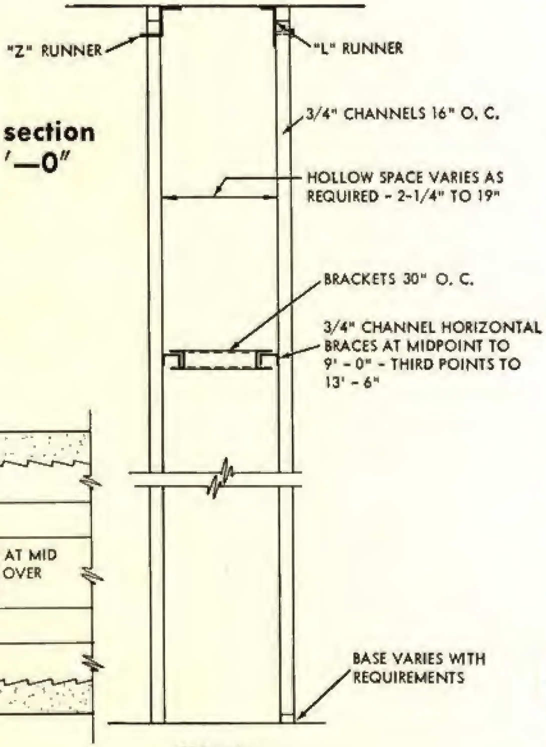
Core wall constructions with studs resting on concrete and without cross bracing are recognized and accepted as providing a test panel average sound transmission loss value of approximately 48 decibels. Cross ties, as recommended for good practice and structural rigidity, will reduce this 48 decibel transmission loss.

Limiting heights and grouting of metal bases follow closely the recommendations outlined for solid plaster partitions.

horizontal section 3″=1′−0″.

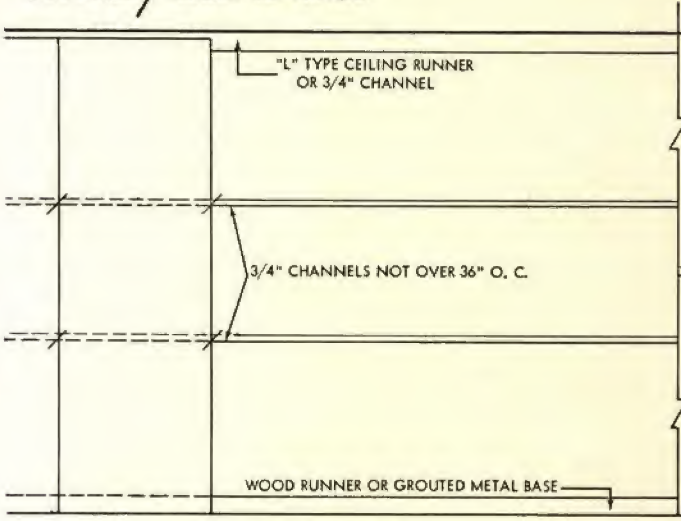

3/4" CHANNELS 16" O. C.
3/8" x 16" x 48" ROCKLATH
3/4" BRACING CHANNELS AT MID POINT IF PARTITION NOT OVER 9' OTHERWISE 3RD POINTS
BRACE TITE CLIPS
BRACKETS NOT OVER 30" O. C.
ROCKLATH & PLASTER
METAL LATH & PLASTER

vertical section 1½″=1′−0″

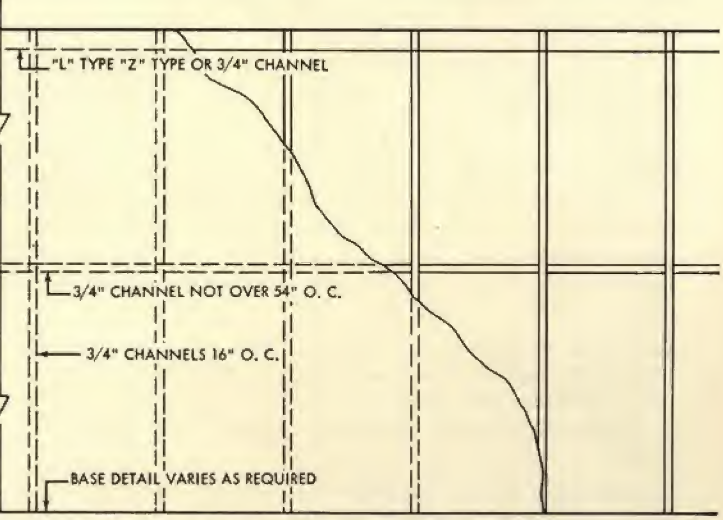

"Z" RUNNER
"L" RUNNER
3/4" CHANNELS 16" O. C.
HOLLOW SPACE VARIES AS REQUIRED - 2-1/4" TO 19"
BRACKETS 30" O. C.
3/4" CHANNEL HORIZONTAL BRACES AT MIDPOINT TO 9' - 0" - THIRD POINTS TO 13' - 6"
BASE VARIES WITH REQUIREMENTS
CORE WALL

EXTERIOR WALL FURRING SYSTEM

DETAILS / scale as noted

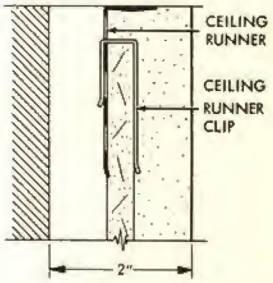

"L" TYPE CEILING RUNNER OR 3/4" CHANNEL
3/4" CHANNELS NOT OVER 36" O. C.
WOOD RUNNER OR GROUTED METAL BASE

long length insulating ROCKLATH and plaster elevation

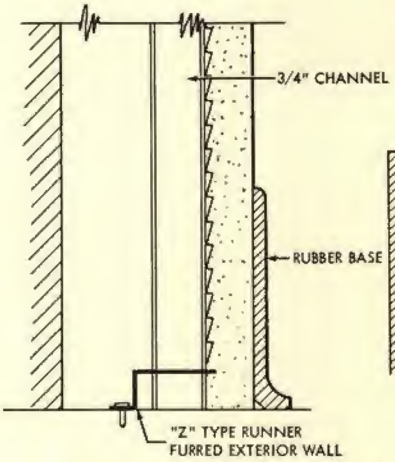

"L" TYPE "Z" TYPE OR 3/4" CHANNEL
3/4" CHANNEL NOT OVER 54" O. C.
3/4" CHANNELS 16" O. C.
BASE DETAIL VARIES AS REQUIRED

¾" channel furring, metal lath or insulating ROCKLATH and plaster

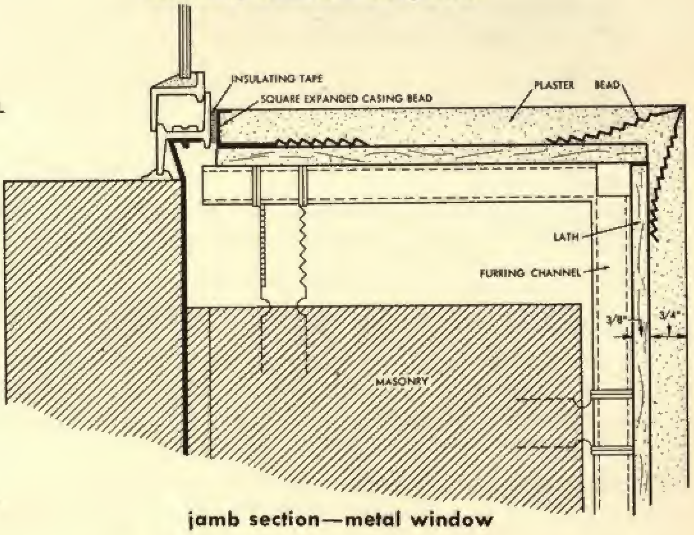
ELEVATION / ½" = 1'–0"



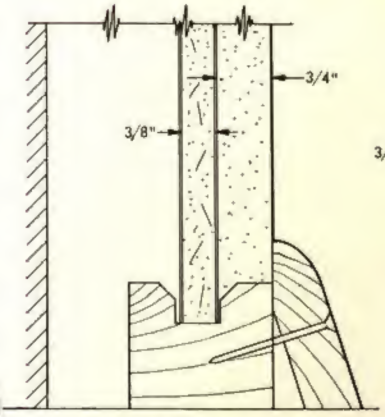
ceiling



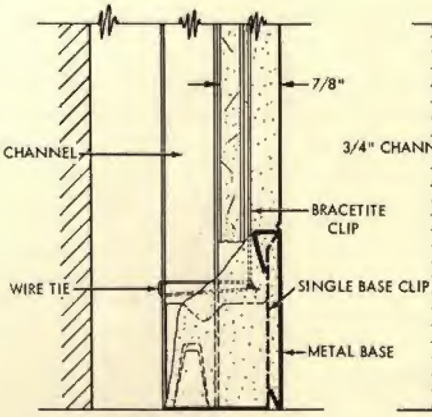
rubber base



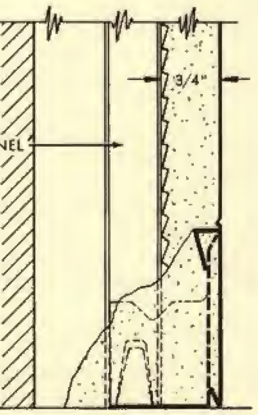
jamb section—metal window



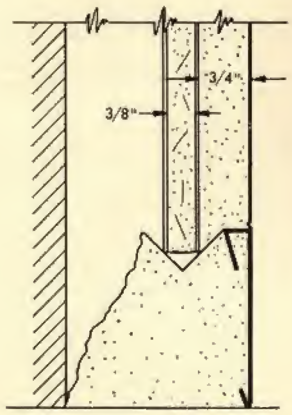
wood runner & wood base long length ROCKLATH & plaster



ROCKLATH & plaster



metal lath & plaster



metal base—long length ROCKLATH & plaster

EXTERIOR WALL FURRING SYSTEM

DESCRIPTION

The Exterior Wall Furring System is a method of attaching ¾" channels and long length Insulating ROCKLATH plaster base to exterior walls using USG Adjustable Wall Furring Brackets.

FUNCTION AND UTILITY

Furrs and Aligns Exterior Wall—Attachment of ¾" channels and Long Length Insulating ROCKLATH to exterior masonry walls using USG Adjustable Wall Furring Brackets furrs and aligns wall, providing proper air space and a uniformly even plaster base.

Sturdy—Rust Resistant—Easily Attached—USG Adjustable Wall Furring Brackets are made from 20 gauge tight coat galvanized steel. Easily attached to masonry walls using ⅝" stub nails for concrete and 2" cut nails for masonry, or can be laid in mortar joints.

Insulation—The use of long length Insulating ROCKLATH provides insulation equivalent to ½" fiber insulating board. (See Insulating ROCKLATH plaster base, pages 2 and 3.)

Vapor Barrier—Insulating ROCKLATH plaster base is an effective safeguard against harmful condensation.

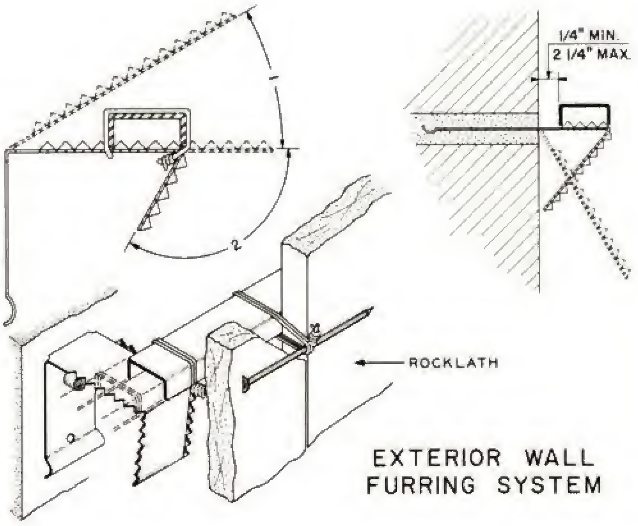
LIMITATIONS

1. Limiting height is 12'-0" unless special details are incorporated.

2. Minimum air space of 1" required. Space between back of lath and the wall shall not be filled with wool or other materials.

ADJUSTABLE WALL FURRING BRACKETS

1. After attachment, bend bracket to horizontal position.
2. Wire tie plumbed channel to bracket ¼" min. from wall.
3. Bend excess down.



EXTERIOR WALL FURRING SYSTEM

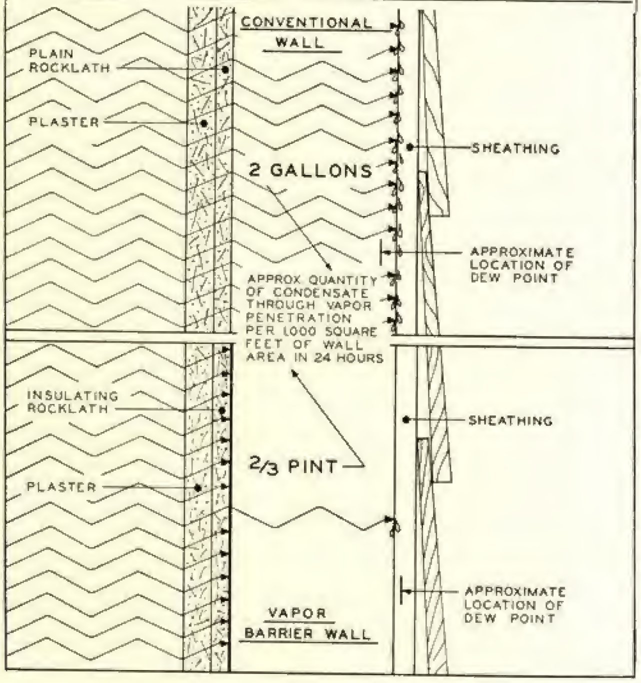
VAPOR BARRIERS

Vapor Barrier—The insulating ROCKLATH applied to the inside face of all exterior walls and top floor ceilings provides an effective vapor barrier to help safeguard against harmful condensation within such spaces. Aluminum foil backed Insulating ROCKLATH Plaster Base meets FHA minimum requirements for vapor barrier protection.

When the atmospheric conditions indicated in the accompanying chart are of considerable duration, the amount of condensation in the "Conventional Wall" is sufficient to damage the interior decoration, exterior paint, or any of the other wall components. In the "Vapor Barrier Wall," however, the quantity of condensate is so minor as to be readily dissipated.

ILLUSTRATION OF IMPORTANCE OF VAPOR BARRIER

INSIDE ATMOSPHERE		OUTSIDE ATMOSPHERE
70°F	TEMPERATURE	10°F
45%	RELATIVE HUMIDITY	90%
3.63	GRAINS MOISTURE PER CU. FT.	0.69
0.332 IN. HG.	RESULTANT VAPOR PRESSURE	0.067 IN. HG.


CONVENTIONAL WALL
PLAIN ROCKLATH
PLASTER
SHEATHING
2 GALLONS
APPROXIMATE LOCATION OF DEW POINT
APPROX QUANTITY OF CONDENSATE THROUGH VAPOR PENETRATION PER 1,000 SQUARE FEET OF WALL AREA IN 24 HOURS
INSULATING ROCKLATH
SHEATHING
2/3 PINT
PLASTER
APPROXIMATE LOCATION OF DEW POINT
VAPOR BARRIER WALL

RECOMMENDATIONS

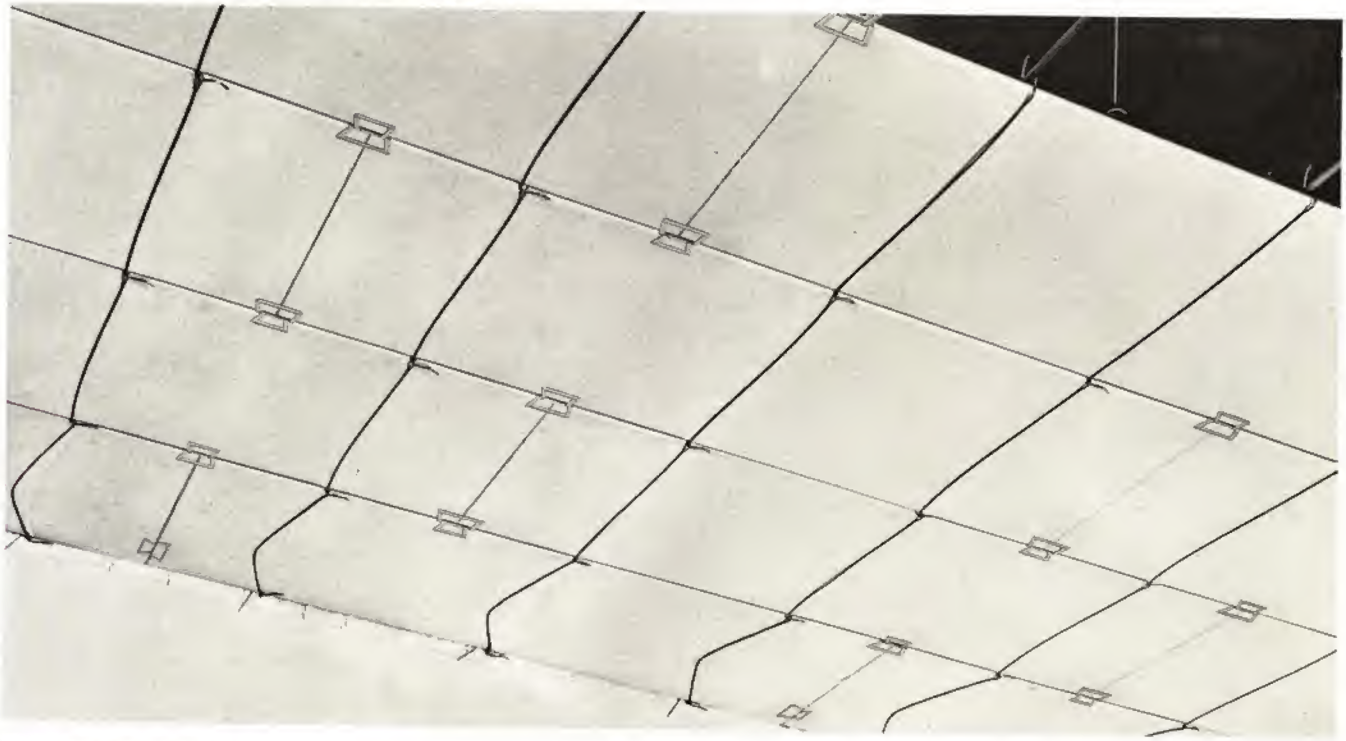
1. An efficient vapor barrier should be installed in all exterior walls and ceilings in locations where below freezing weather occurs for extended periods of time.

2. Vapor barrier should be located on the warm side of the exterior wall or top floor ceiling.

3. Vapor barrier should have a vapor permeability of not more than 1.00 perms. (Grains per square foot per hour per inch of mercury vapor pressure difference.)

SUSPENDED CEILING SYSTEMS

ROCKLATH Plaster Base — BRACE-TITE System



DESCRIPTION

Suspended ceilings consist of three basic elements:

1. Light channel grillage, properly supported, rigid and of sufficient strength to carry to dead load without deflection.
2. A lath plaster base securely attached to the grillage on which the plaster may be applied.
3. The plaster consisting of the basecoat and finish coat.

FUNCTION AND UTILITY

Fire-Protection—Constructed of incombustible component parts, it is possible to design for established fire resistance ratings of one to four hours by varying grillage spacing, type of lath and attachment, type of aggregate and proportioning of gypsum plaster and plaster thickness.

Economy—Lightweight. The established fire ratings can reduce annual insurance premiums.

Utility—The fireproof membrane serves to conceal structural and mechanical elements, and as the decorative base either as a paintable surface or as an acoustical ceiling with acoustical plaster as an integral part of the assembly or as a base for adhesive application of acoustical tile.

Insulation and Vapor Barrier—Where insulation and vapor barriers are desired, use of insulating (foil back) ROCKLATH will provide an effective vapor barrier and increase the overall "U" factor of the roof ceiling assembly.

LIMITATIONS

1. Main carrying channels and cross furring members should not be let into masonry walls or partitions, but should be independently supported.
2. All recommended spacings of hanger wires and channels are maximum and should not be exceeded.
3. BRACE-TITE Field Clips are designed for use with standard ¾″ cold rolled channels having ½″ legs (Minimum).
4. On large continuous ceiling expanses the following recommendations will provide better performances:

   (a) Free the ceiling from columns or exterior walls and loadbearing interior walls.

   (b) Break the continuity of grillage, lath and plaster where large ceiling expanses occur by control joints or other means. The maximum recommended area within control joints is 2400 square feet, with no joints spaced more than 60 feet apart in either direction.

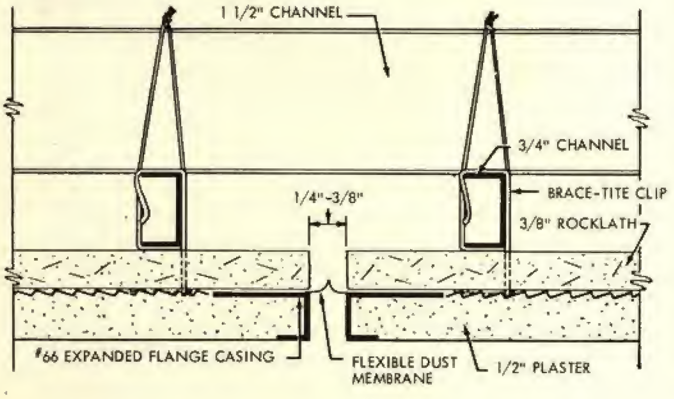
   (c) Lightweight aggregates reduce the strength of the basecoat plaster. Where lightweight aggregates are used over grillage and metal lath it is desirable to reduce the span of cross furring members.

   (d) Where contact furred or suspended ceiling occur under roof construction the plenum should be vented according to recommended engineering practice.

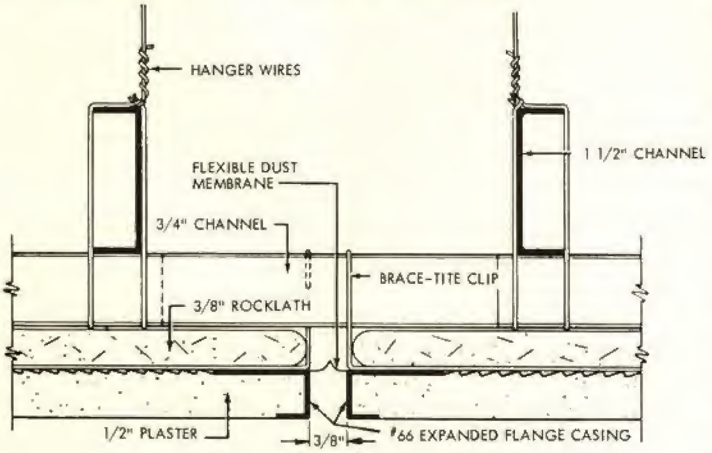
   (e) The grillage recommendations are for support of the lath and plaster dead loads and are not designed to support concentrated loads of mechanical equipment or workmen, particularly after the plaster has been applied. Independently supported cat walks and equipment platforms should be provided.

SUSPENDED DETAILS Scale: Half Size

expansion joint . . . parallel to ¾" channels

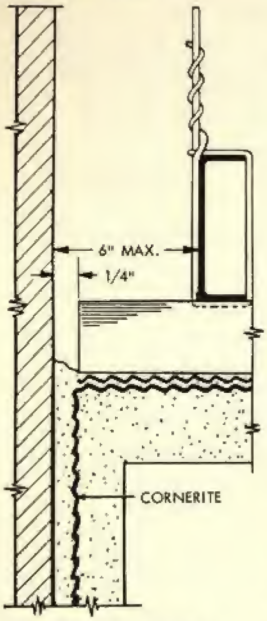


expansion joint perpendicular to ¾" channels

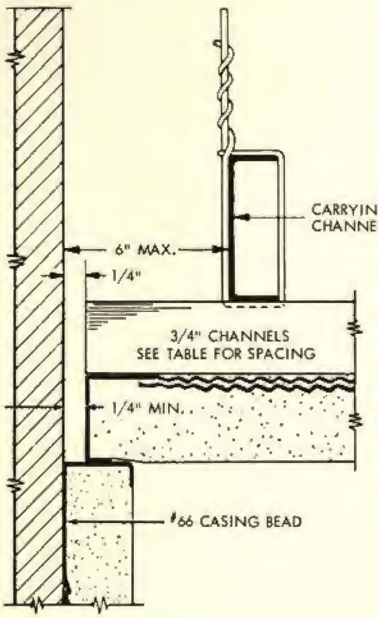


ISOLATION FROM
WALLS OR COLUMNS

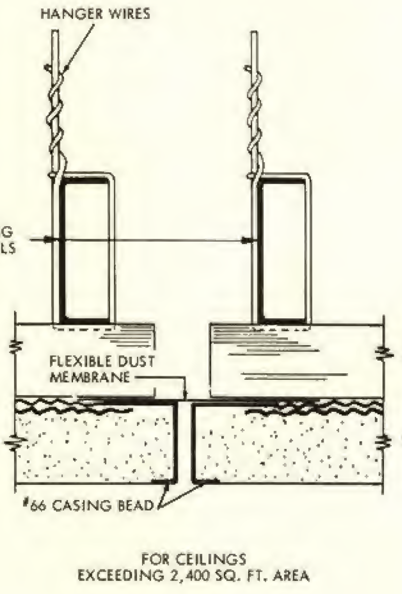
• metal lath



PERIMETER - RESTRAINED (1)

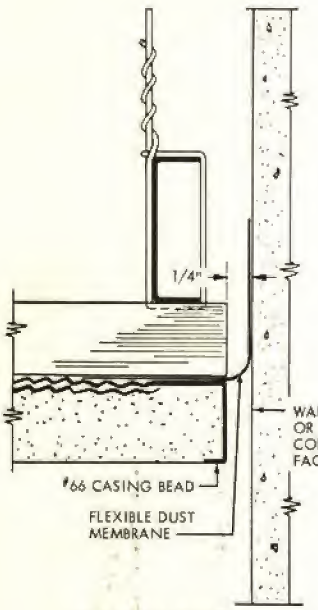


PERIMETER ISOLATION (2)



FOR CEILINGS
EXCEEDING 2,400 SQ. FT. AREA

CONTROL JOINT



ISOLATION FROM
WALLS OR COLUMNS

Note: 1. For ceilings with either control joints or less than 2400 square feet of area. 2. For plaster faced load bearing wall-ceiling intersections.

RESILIENT PLASTERING SYSTEMS

DESCRIPTION

Resilient lathing and plastering systems consist of three elements:

1. Specially formed steel clips to provide a resilient attachment of conventional lathing materials to the structural framing.
2. Metal lath or ROCKLATH plaster base.
3. Basecoat and finish coat plasters.

FUNCTION AND UTILITY

Sound Insulation—By resiliently attaching the lath and plaster diaphragms to the framing, the transfer of air-borne sound is materially reduced. For example:

WOOD STUD LATH & PLASTER PARTITIONS	DECIBEL—AV. SOUND TRANSMISSION LOSS
ROCKLATH Plaster Base	
Nail-on ROCKLATH	41.1
Resilient Clips & ROCKLATH	52.2
TRUSSTEEL Studs	
Tied-on Metal Lath	40.5
Resilient Clips & Metal Lath	54.7
PYROBAR Partitions	
Plaster Direct	39
Resilient Clips—metal lath and plaster one side	50

(1) Values are based on panel test made at recognized laboratories and are only for the particular construction tested (type and thickness of lath, framing, thickness of plaster, etc.). See Technical Data on pages 31 & 32 for the various partition systems and more specific information.

Crack Resistance—The resilient attachment of the lath and plaster reduces transmission of stresses due to structural movement.

Economy—It is generally accepted that added resistance to sound transfer can best be obtained through increased mass or through isolation of the partition faces. The first is costly in materials and labor and increases the dead-load carried by the structural frame.

Isolating the surface by resilient clips adds only the nominal cost of a few clips per sq. yd. of partition to the cost of conventional construction materials and assemblies.

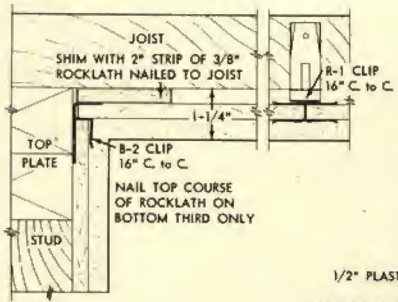
Reduction of future maintenance and decoration is a long range economy.

LIMITATIONS

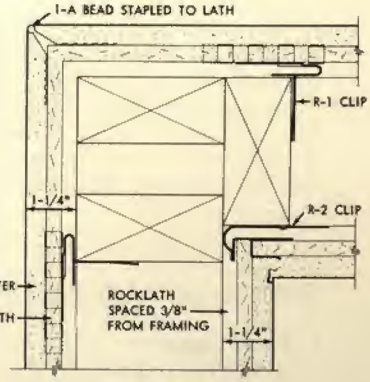
1. See limitations on ROCKLATH plaster base and Metal Lath, Pages 2 & 6.
2. Perforated ROCKLATH should not be used on ceilings with the resilient clips directly supporting the lath. Use plain or insulating ROCKLATH and *Three* coat plaster; the full scratch coat cross-raked and allowed to set, followed by a brown coat applied to a total uniform thickness of not less than 7/16 inch.

RESILIENT ROCKLATH

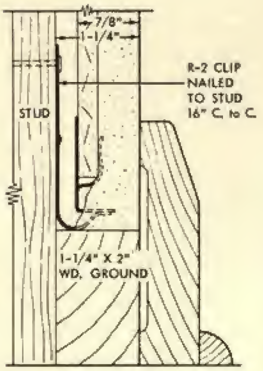
No Scale


JOIST
SHIM WITH 2" STRIP OF 3/8" ROCKLATH NAILED TO JOIST
R-1 CLIP 16" C. to C.
1-1/4"
TOP PLATE
B-2 CLIP 16" C. to C.
NAIL TOP COURSE OF ROCKLATH ON BOTTOM THIRD ONLY
STUD

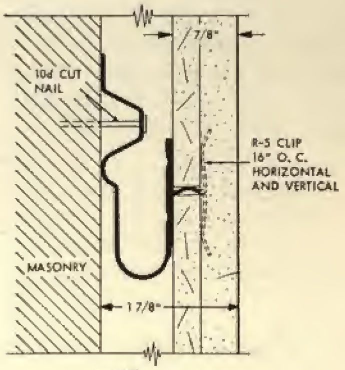
ceiling



corner



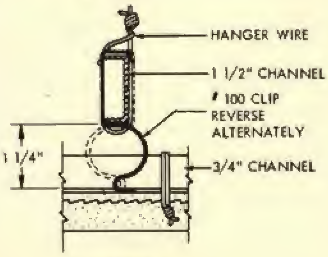
base



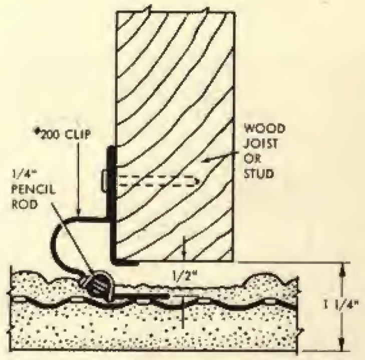
wall

RESILIENT METAL LATH

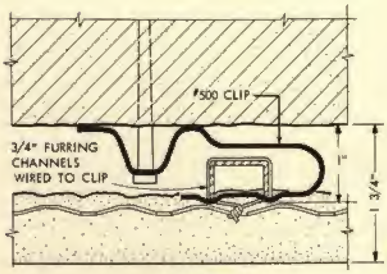
No Scale



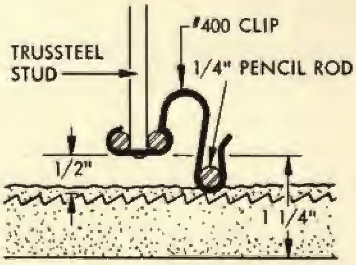
ceiling



ceiling or wall



wall



partition

BEAM and COLUMN FIREPROOFING

DESCRIPTION

Membrane fireproofing of lath and gypsum plasters provides lightweight, thin, compact fire-protection and finished surfaces for structural framing members. The protection afforded in hours of fire resistance depends on the type of lath base, its method of attachment and spacing, proportioning of aggregate to gypsum plaster and plaster thickness.

FUNCTION AND UTILITY

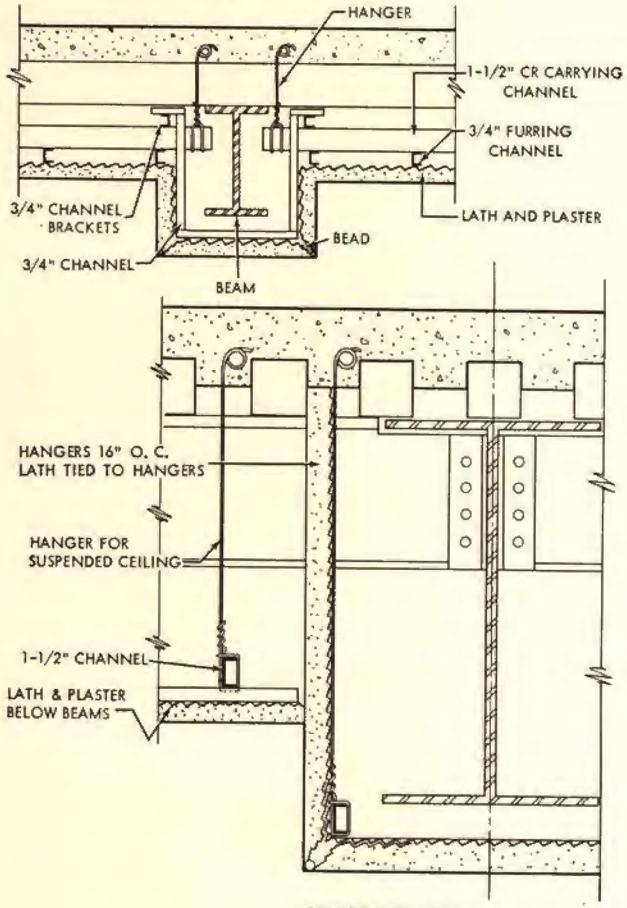
Fire-Protection—The component parts are incombustible. The gypsum, in addition, calcines slowly, retarding flame and resisting heat transfer by giving up its chemically combined water of crystallization. The aggregate acts only as a bulking agent for the plaster and some types, as an insulating material against heat transfer. For example, lightweight aggregates provide more fire resistance than sand.

Economy—The thin lightweight lath and plaster assembly reduces the dead load and lost floor area. The plaster surface provides the base for final decoration. Increased fire-protection permits lower insurance premiums.

LIMITATIONS

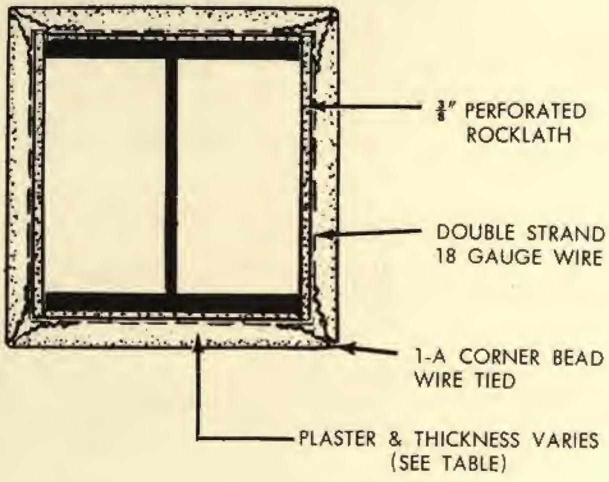
To resist impact, provide adequate protection at column corners subject to damage from cartage equipment, etc.

- metal lath beam & girder fireproofing

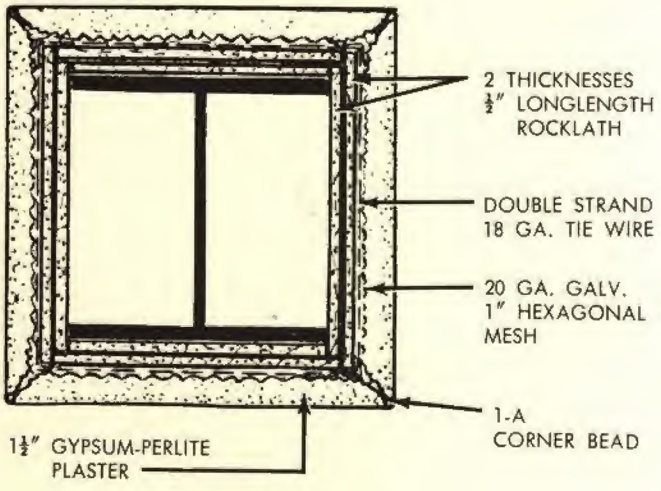

HANGER
1-1/2" CR CARRYING CHANNEL
3/4" FURRING CHANNEL
LATH AND PLASTER
3/4" CHANNEL BRACKETS
BEAD
3/4" CHANNEL
BEAM
HANGERS 16" O. C. LATH TIED TO HANGERS
HANGER FOR SUSPENDED CEILING
1-1/2" CHANNEL
LATH & PLASTER BELOW BEAMS

GIRDER FIREPROOFING

ROCKLATH column fireproofing


⅜" PERFORATED ROCKLATH
DOUBLE STRAND 18 GAUGE WIRE
1-A CORNER BEAD WIRE TIED
PLASTER & THICKNESS VARIES (SEE TABLE)

1, 1½, 2 & 3 hr.


2 THICKNESSES ½" LONGLENGTH ROCKLATH
DOUBLE STRAND 18 GA. TIE WIRE
20 GA. GALV. 1" HEXAGONAL MESH
1-A CORNER BEAD
1½" GYPSUM-PERLITE PLASTER

4 hr.

TECHNICAL DATA All tests made by nationally recognized laboratories

COLUMNS

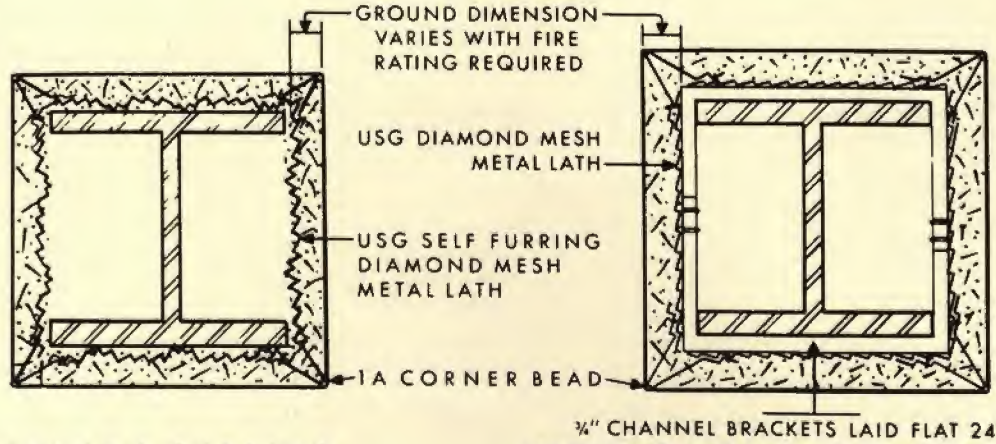
Type Base	Construction	Plaster and Aggregate	Approx. Weight Per Sq. Ft.	Nominal Over-All Partition Thickness	Fire Rating
Expanded Metal	Steel Section (A)	Gypsum-Sand, 1:2, 1:3		¾" λ	1 hour
		Gypsum-Perlite, 100:2, 100:3		1" λ	2 hours
		Gypsum-Perlite, 100:2, 100:3		1⅜" λ	3 hours
		STRUCTO-LITE (Type "R")		1⅞" λ	4 hours
		STRUCTO-LITE (Type "S")		1¾" λ	4 hours
⅜" Perf. ROCKLATH	Steel Section	Gypsum-Sand, 1:2½		½" λ	1 hour
		Gypsum-Sand, 1:2½		⅝" λ	1½ hours
		Gypsum-Perlite, 100:2½		1" λ	2 hours
		Gypsum-Perlite, 100:2, 100:3		1¾" λ	3 hours
½" Long Length V-edge ROCKLATH	Steel Section	Gypsum-Perlite, 100:2, 100:3		1½" λ	4 hours

λ Plaster thickness only. (Measured from face of lath.)

(A) Self furring lath wrapped tight to column, or diamond mesh on channel framing

See Technical Data for walls and ceilings on page 32

metal lath column fireproofing


GROUND DIMENSION VARIES WITH FIRE RATING REQUIRED
USG DIAMOND MESH METAL LATH
USG SELF FURRING DIAMOND MESH METAL LATH
1A CORNER BEAD
¾" CHANNEL BRACKETS LAID FLAT 24" O.C.

COLUMN FURRING

ALTERNATE METHOD OF COLUMN FURRING

TECHNICAL DATA All tests made by nationally recognized laboratories

PARTITIONS

Type Base	Construction	Plaster and Aggregate (N)	Approx. Weight Per Sq. Ft.	Nominal Over-All Partition Thickness	Fire Rating	Sound δ Transmission Loss (db)
Expanded Metal	Wood Frame (2 x 4 Studs)	¾" Gypsum-Sand, 1:2, 1:3	18.1	5⅛"	45 Min.	
		¾" Gypsum-Sand, 1:2, 1:2	18.3	5⅛"	1 hour	39
		⅞" Gypsum-Sand, 1:2, 1:3	20	5⅜"	1 hour	39
		¾" Gypsum Wood Fiber		5⅛"	1½ hours	
		¾" Gypsum-Vermiculite, 100:2½, 100:3½		5⅛"	1 hour	
	Solid	1½" Gypsum-Perlite, 100:2½, 100:2½	9.6	1½"	1 hour	34
		Gypsum-Perlite, 100:2, 100:3	11	2½"	2 hours	
		Gypsum-Sand, 1:2, 1:2	18.1	2"	1 hour	38
	TRUSSTEEL* Studs (Test data based on 3¼" stud unless noted. Total thickness of partitions will vary according to width of stud used.)	Gypsum-Sand, 1:2, 1:3	19.1	4¾"	45 Min.	
		Gypsum-Sand, 1:2, 1:2	19.2	4¾"	1 hour	40
		Gypsum-Sand, 1:2, 1:3 (¾" over lath)	19.6	5"	1 hour	
		Gypsum Wood Fiber (¾" over lath)		5"	2 hours	
		Gypsum-Perlite, 100:2, 100:3 (⅞" over lath)		5¼"	2 hours	
		Gypsum-Sand, 1:1, 1:2 (¾" over lath)		5"	1½ hours	
		Gypsum-Sand, 1:1, 1:2 (¾" over lath) — (1⅝" stud)	18	3⅜"	1½ hours	36
	#400 Resilient Clips. 3¼" stud	Gypsum-Sand, 1:2, 1:3	20	5¾"		55
	1⅝" stud	Gypsum-Sand, 1:1, 1:2	18.4	4⅜"		44
⅜" Plain ROCKLATH*	Wood Frame (2 x 4 Studs)	Gypsum-Sand, 1:2, 1:2 ½" λ	†12.0	5⅜"	45 Min.	41
		Gypsum Wood Fiber ½" λ	†11.0	5⅜"	1 hour	
⅜" Perforated ROCKLATH	Wood Frame (2 x 4 Studs)	Gypsum-Sand, 1:2, 1:2 ½" λ	†12.0	5⅜"	1 hour	41
		Gypsum-Vermiculite, 100:2½ ½" λ		5⅜"	1 hour	
		Gypsum-Perlite, 100:2½ ½" λ		5⅜"	1 hour	
	TRUSSTEEL Studs	STRUCTO-LITE* ½" λ	9	5¼"	1 hour	44
		Gypsum-Sand, 1:2, 1:2 ½" λ	16	5¼"	1 hour	48
		Gypsum-Perlite, 100:2½ ½" λ	9	5¼"	1 hour	
		Gypsum-Sand, 1:1, 1:2 (1⅝" Stud) ½" λ	13.3	3⅝"	1½ hours	41
	#400 Resilient Clips	Gypsum-Sand, 1:2, 1:3 ½" λ	17	6"		51
½" Long-Length V-edge ROCKLATH	Solid	Gypsum-Sand, 1:1, 1:2	16	2"	1 hour	
		Gypsum-Sand, 1:2, 1:3	16	2"	45 Min.	37
		Gypsum-Perlite, 100:2, 100:3	9	2"	1½ hours	37

CEILINGS

Expanded Metal Lath	Wood Frame (A)	Gypsum-Sand, 1:2, 1:3		¾" λ	1 hour	
	Steel Joists (B)	Gypsum-Sand, 1:2, 1:3		¾" λ	2 hours	
		Gypsum-Vermiculite, 100:2, 100:3		¾" λ	3 hours	
		Gypsum Wood Fiber		1" λ	3 hours	
		Gypsum-Vermiculite, 100:2, 100:3		1" λ	4 hours	
	Cellular Steel Floor (C)	STRUCTO-LITE		¾" λ	3 hours (M)	
		Gypsum Wood Fiber		1" λ	4 hours	
		Gypsum-Perlite, 100:2, 100:3		1" λ	4 hours	
	Cellular Steel Floor (D)	Gypsum-Vermiculite, 100:2, 100:3		1" λ	4 hours	
	Suspended Channel (E)	STRUCTO-LITE		⅝" λ	3 hours	
Perforated ROCKLATH (F)	Wood Frame	Gypsum-Sand, 1:2, 1:2 (G)		½" λ	1 hour	
		Gypsum-Perlite, 100:2½		½" λ	1 hour	
		Gypsum-Vermiculite, 100:2½		½" λ	1 hour	
Perforated ROCKLATH (BRACE-TITE System)	Steel Joists, 2" Concrete Slab (H)	STRUCTO-LITE or Gypsum-Perlite, 100:2½ (H)		⅝" λ	1 hour	
		STRUCTO-LITE or Gypsum-Perlite, 100:2½ (J)		½" λ	2 hours	
		STRUCTO-LITE or Gypsum-Perlite, 100:2½ (K)		⅝" λ	3 hours	
		Gypsum-Perlite, 100:2½ (L)		1" λ	4 hours	

λ Plaster thickness only. (Measured from face of lath.)
δ Sound transmission tests made by recognized laboratories under laboratory conditions. Test results provide comparison of construction efficiencies.
† Approximate weight—lath and plaster only.
A Lath applied with 1½", 11 gauge, 7⁄16" head barbed roofing nails, 6" c. to c.
B 2½ reinforced concrete slab on Riblath or 2" precast gypsum tile above.
C Ceiling suspended 9" or more below floor slab.
D Ceiling suspended 3" or more below floor slab.
E Incombustible construction above.
F Tongue and groove finished floor.
G Striplath applied over lath joints to joists with ¾" nails having ½" heads; asbestos paper between sub & finish floors.
H Channels 16" c. to c.
J Channels 16" c. to c. with supplementary 14 gauge diagonal wires.
K Channels 12" c. to c. with supplementary 14 gauge diagonal wires.
L Channels 12" c. to c. with supplementary 20 gauge hexagonal mesh stapled to ROCKLATH and wire-tied to the ¾-inch channels through the joints between laths.
M Protected steel beam—4 hours
N Data on constructions with aggregate proportioning exceed ASA-A42 standard specifications are included.

*T. M. Reg. U.S. Pat. Off.

SPECIFICATIONS | ROCKLATH

Notes to Architect: *Following are complete specifications for* Rocklath *plaster bases, including nail-on and clip attachment, and partition systems. Select paragraphs required to complete particular job specifications, taking into account the type of lath, type of plaster and minimum plaster thickness required by certain systems and fire ratings:*

Where sound Transmission Loss is a design consideration, use sand aggregate to provide mass for maximum sound transmission loss.

When sound is a major factor, contact your U.S.G., Architecture Service Representative or the Architect Service Dept., Chicago, for recommendation.

Where lath and plaster ceilings are located under roof construction, it is recommended that the space thus established be ventilated. Such ventilation, with or without vapor barrier and insulation, shall be designed in accordance with accepted engineering practice.

Where reinforced concrete or concrete fireproofed structural steel construction is used, it is recommended that relief from stresses imposed by such members be provided by locating the partitions so that the face of the plaster does not continue in the same plane across the face of such columns or beams. If partitions are not so located, one of the methods given below should be used to provide partial isolation from the faces of the structural members, in the following order of preference:

1. Furring away from the face of such members.

2. By allowing the Rocklath *to carry across the faces of such structural members.*

3. By scatter nailing No. 30 asphalt felt then 2.5 lb diamond mesh metal lath across the faces of such structural members, carrying felt and metal lath out at least 1″ onto the Rocklath *and stapling to the* Rocklath.

I. SCOPE

Unless otherwise indicated, all walls, partitions and ceil ings are included.

II. GENERAL CONDITIONS

In cold weather, building should be glazed and heated before lathing.

III. MATERIALS

A. Gypsum Lath—Shall be Rocklath Plaster Base manufactured by United States Gypsum Company in the following types and sizes as required:

1. (Plain) (Perforated) (Insulating Rocklath) (⅜″) (½″) thick by 16″ x 48″.

2. Long length Rocklath ½″ thick, 24″ wide and ceiling high lengths, with "V" edges.

3. Long length insulating Rocklath ⅜″ thick, 24″ wide, and ceiling high lengths, with square edges.

B. Cornerite—Shall be USG Cornerite.

C. Corner Bead—Shall be USG
(1A Expanded Flange)
(4A Flexible Solid Flange Corner Bead)
(For ¾″ Bull Nose Bead specify either 10A Expanded Flange or 5A Short Flange)

D. Channels shall be USG ¾″ and 1½″ Cold Rolled Painted Channels. (Other Main Carrying Channels as required. See table, page 23.)

E. Striplath shall be 4″ or 6″ wide USG Striplath.

Metal Lath Reinforcement at door and window opening shall be 13½″ x 19″ or 9″ x 48″ pieces of 2.5 lb. Self Furring Lath.

F. Resilient Clips—Shall be USG

(R-1—Resilient Clips for wood stud or joist framing)

(R-2—Resilient Clips for corners and angles, wood frame construction)

(R-3—Resilient Clips of ¾″ channels, ceilings only)

(R-5—Resilient Clips for masonry construction)

G. BRIDJOINT Clips—Shall be USG

(B-1—Field Clips for (⅜″) (½″) Rocklath plaster base)

(B-2—Corner Clip for ⅜″ Rocklath only)

H. BRACE-TITE Clips—Shall be USG Brace-Tite Clips

(BT-1—For ¾″ Channels)

(BT-A—For Acoustical base)

Trus-Lok TL-1 field clips and TL-2 starter finisher clips manufactured by United States Gypsum Co.

I. TRUS-LOK Clips—Shall be USG Trus-Lok TL-1 field clips and TL-2 starter-finisher clips manufactured by United States Gypsum Company.

J. Ceiling Runner—For solid Rocklath and plaster partitions shall be USG L-shaped Ceiling Runner and ceiling runner clips for attaching long length Rocklath to ceiling construction.

K. Furring Brackets—Shall be USG Adjustable Wall Furring Brackets.

L. Bracing Clips—Shall be USG bracing clips for temporary bracing of solid Rocklath and plaster partitions.

M. Metal Studs—Shall be ($1\frac{5}{8}$") ($2\frac{1}{2}$") ($3\frac{1}{4}$") (4") (6") Trussteel Studs, and accessories.

N. Metal Base—Shall be USG $2\frac{1}{2}$" high flush metal base with double, single, masonry and stud clips as required.

O. Lath Nails—Shall be $1\frac{1}{8}$" ($1\frac{1}{4}$" for $\frac{1}{2}$" Rocklath), 13 gauge, blued, $\frac{19}{64}$" flat head, smooth diamond point nails.

P. Staples—For attachment of Cornerite, Corner Bead and Striplath shall be gummed finish steel having $\frac{9}{16}$" legs and designed for mechanical driving.

Q. Hangers—Shall be (9 gauge) (8 gauge) galvanized annealed wire, ($\frac{3}{16}$") ($\frac{1}{4}$" rods) ($\frac{3}{16}$" x 1" mild steel flats).

R. Tie Wire—Shall be 16 gauge and 18 gauge galvanized annealed wire as hereafter specified.

S. Tie-In Shoes—Shall be 12" lengths of Cornerite or L-type ceiling runner.

T. Access Panels—Shall be USG (8"x8") (12"x12") (14"x20") (22"x24") (Will be furnished by others and installed under this section).

IV. GROUNDS

Shall be set to provide the following minimum plaster thickness including finish over the Rocklath plaster base:

a) $\frac{1}{2}$" on wood frame or metal stud.

b) ($\frac{3}{4}$") ($\frac{7}{8}$") (1") each face on Solid Rocklath and plaster partition system.

c) ($\frac{1}{2}$") ($\frac{5}{8}$") (1") on Brace-Tite lathing system.

d) $\frac{3}{4}$" on long length Rocklath exterior wall furring system.

e) ($\frac{1}{2}$") ($\frac{5}{8}$") (1") ($1\frac{3}{4}$") for Rocklath column fireproofing.

V. ERECTION

A. Nail-On to Wood Framing Member:

Rocklath plaster base shall be applied face out with the long dimension at right angles to the framing members. The end joints shall be staggered to fall on different supports in adjacent courses, or the Rocklath shall be erected so that the end joints are continuous on a support. In the latter case the continuous joints shall be covered with 3-inch striplath and the long or edge joints shall be offset or staggered. In all cases, Rocklath joints shall be butted together. Space nails approximately $\frac{3}{8}$" from edges and approximately 5" apart, using four nails per lath per support. (For $\frac{1}{2}$" Rocklath with supports more than 16" o.c. nails must be spaced approximately 4" apart using 5 nails per lath per support.) Cut accurately and fit Rocklath plaster base neatly around all electrical outlets, etc. All internal angles shall be reinforced with cornerite over the Rocklath and all exterior angles shall be reinforced with corner bead secured to the Rocklath by stapling.

Optional—Power Driven Staples

Where gypsum lath is attached to wood framing members with pneumatic power driven staples, they shall be made of not less than 16 gauge flattened, galvanized wire, with a $\frac{7}{16}$" minimum wide crown (outside measurement). Staples shall be driven with the crown parallel to the long dimension of the framing member, in such a manner that the crown bears tightly against the lath but does not cut into the face paper. The legs of the staples shall not be closer than $\frac{3}{8}$" from the ends and edges of the lath.

$\frac{3}{8}$" Lath. Use not less than 4 staples per 16" width of lath per framing member, and spaced not more than 5" o.c. Staples must have at least $\frac{7}{8}$" long legs, with divergent points.

$\frac{1}{2}$" Lath. Use not less than 5 staples per 16" width of lath per framing member, and spaced not more than 4" o.c. Staples must have at least 1" long legs, with divergent points.

Floating Angle Construction

To reduce the possibility of plaster cracking caused by stress at intersection of framed walls and ceilings, gypsum lath shall be applied as follows: The ceiling lath shall be applied first, eliminating the last two nails on joists running perpendicular to the intersecting wall. Do not nail the ends of the lath to the joist running parallel and adjacent to the intersecting wall. Apply lath on wall areas, eliminating the last two nails per stud adjacent to the ceiling intersection and the nails on studs at wall intersections. The balance of the wall and ceiling areas shall be nailed or stapled in the conventional manner. Cornerite with flanges of 2" or more shall be attached to the lath only (not to the framing members) in all "floating" angles.

B. BRIDJOINT Lathing System

1. For Wood Framing—Rocklath shall be nailed to the framing members in such a manner that the end joints of the lath (16" dimension) do not fall on framing members and are staggered in adjacent courses. End joints shall be secured to adjacent lath by use of a B-1 Bridjoint Field Clip at each corner of each lath. The internal corners of lath may be secured to each other by the use of B-2 Bridjoint corner clips. In lieu of B-2 clips, Cornerite may be stapled to the Rocklath. Corner Bead shall be applied to all exterior angles by stapling to Rocklath plaster base. Do not nail Rocklath to framing members in the angles.

2. For Nailable Steel Framing—Rocklath shall be nailed to the framing members, using a nail with a $\frac{3}{8}$" head and of sufficient length to provide proper "lock" in the nail retention curve or as recommended by the manufacturer of the framing member, in such a manner that the end joints of the lath (16" dimension) do not fall on the framing members. End joints shall be staggered in adjacent courses and shall be secured to adjacent lath by use of B-1 clips at each lath corner. Nail Rocklath to framing members in the angles. Cornerite shall be applied to interior angles and corner bead to exterior angles by stapling to the Rocklath Plaster Base.

C. Resilient Lathing System

Rocklath Plaster Base shall be applied face out with the long dimension at right angles to the framing members and with end joints staggered and over framing members. Rocklath shall be attached to the framing members by means of R-1 Resilient Clips nailed to framing and placed at every intersection of Rocklath edges with framing members, and at corners with R-2 Resilient Clips so that the Rocklath is secured by the clips spaced

16″ o.c. in both directions. Corner Beads shall be stapled to ROCKLATH. Under no circumstances shall ROCKLATH plaster base be attached directly to the framing.

For resilient ceiling attachment with nail-on side wall, shim the perimeter of the ceiling with a 2″ strip of ⅜″ ROCKLATH nailed to joists, place a B-2 BRIDJOINT Corner Clip on top course of wall ROCKLATH and nail bottom third of this course only. Insert ceiling ROCKLATH into B-2 clip at the angle, attach resilient clips to other edge and proceed with resilient application on ceiling.

D. Resilient Lathing System for Masonry

R-5 Resilient Clips shall be used for the attachment of ROCKLATH to masonry walls by placing the clips not over 16″ o.c. along the long edge of the lath. ROCKLATH shall be erected with long dimension horizontal, with end joints staggered in adjacent courses. End joints of lath shall be secured to the adjacent lath by use of an R-5 Resilient Clip at each corner of the lath.

Each clip shall be anchored to the masonry wall by nailing with 10d cut nails driven into the mortar joints or into the solid sections of masonry units using 2″ staples driven at angle with one leg over clip base or by toggle bolting into hollow sections of such units.

E. Grillage for Suspended Ceilings (BRACE-TITE)

Hangers shall be placed not over 3′0″ o.c. along main runner direction and not over 4′0″ o.c. in opposite direction and 6″ from boundary walls or beams. They shall be of sufficient length to provide proper anchorage to main runners. 1½″ cold rolled main runners shall be installed not over 4′0″ o.c., properly leveled at designated height and hangers secured to runners not over 3′0″. Channel ends shall be spliced not less than 12″ with a double strand of tie wire near each end of splice. ¾″ cold rolled channel cross furring shall be saddle tied to runner channel (12″) (16″) o.c. and 2″ from parallel walls, beams and troffers, with double strand of 16 gauge tie wire. Channel ends shall be lapped 8″ and tied near each end of splice with double strand of tie wire. The channel ends must extend to the plane of the abutting side wall and top flange of channel end bent up to prevent clips from sliding off.

F. Grillage for Furred Ceilings (BRACE-TITE)

¾″ cold rolled channels shall be saddle tied to steel joists (12″) (16″) o.c. and 2″ from parallel walls, beams or troffers with double strand of 16 gauge tie wire. Channel ends shall be lapped 8″ and tied near each end of splice. The channel ends must extend to the plane of the abutting side wall and top flange of channel end bent up.

G. BRACE-TITE Lathing System for Plaster

Place a BRACE-TITE starter clip over the end of the ¾″ channel at the point where it meets the starting wall. ROCKLATH Plaster Base shall be applied with the long dimension at right angles to the ¾″ channels. ROCKLATH shall rest on top of the starter clip loops, and shall be fastened to each channel with a BRACE-TITE field clip. ROCKLATH end joints shall fall between channels and shall be secured with USG B-1 BRIDJOINT field clips on both sides. Succeeding courses of ROCKLATH Plaster Base shall be attached with BRACE-TITE field clips hooked over the channel and fastened into the eyes of the preceding clips. End joints of ROCKLATH, in adjacent courses, shall be staggered. The last course of ROCKLATH shall be cut to the width required to fill the remaining space. The BRACE-TITE field clip used for this final course shall be inserted through the eye of preceding clip, pulled tight into eye and excess length cut off.

Where ¾″ channel runs are interrupted by light troffers, grilles, etc., BRACE-TITE starter clips shall be used to start a new course of ROCKLATH. For these locations, the extended leg of the starter clip shall be cut off so as not to protrude below the brown coat of plaster.

Angles between the ceiling and all vertical plastered planes shall be reinforced with USG Cornerite stapled to the ROCKLATH.

(For 2 or 3 hour fire rating) Lengths of 14 gauge wires shall be run diagonally across ceiling through the BRACE-TITE clip loops. (For 4 hour rating Staple 20 gauge hexagonal mesh to lath and wire tie mesh to furring channels at long edge of lath.)

H. BRACE-TITE Lathing System for Adhesive Application of Acoustical Tile

Place the full loop end of a BRACE-TITE Acoustical Clip over the end of each of the ¾″ channels at the point where it meets the starting wall. ROCKLATH Plaster Base shall be applied with the long dimension at right angles to the ¾″ channels. ROCKLATH shall rest on top of the BRACE-TITE Acoustical Clip and the half loop end snapped over the ¾″ channel to secure the lath tight against the channel.

ROCKLATH end joints shall fall between channels and shall be secured with B-1 BRIDJOINT Clips to adjacent lath on both sides, flat side of clip on tile side. Succeeding courses of ROCKLATH Plaster Base shall be attached with BRACE-TITE Acoustical Clips hooked over the channel behind the loop of the previous BT-A Clip and carried across the ROCKLATH face snapping the half loop end over the channel. End joints of the ROCKLATH plaster base shall be staggered in adjacent courses.

The last course of ROCKLATH shall be cut to the width required to fill the remaining space. The BRACE-TITE Acoustical Clip shall be hooked over the ¾″ channel where it meets the end wall, cut off approximately 2″ longer than the piece of ROCKLATH it is supporting, and wire tied to the ¾″ channel with loop of 18 gauge tie wire. The last course of ROCKLATH may be applied either at the end wall or in the field of the ceiling.

Where ¾″ channel runs are interrupted by light troffers, grilles, etc., the BT-A Clip is reversed and ROCKLATH installed in the same manner as the finishing course.

I. Resilient Lathing System for Suspended Ceilings

R-3 Resilient Clips shall be used for the attachment of ROCKLATH plaster base to ¾″ cold rolled ceiling channels spaced 16″ o.c. by placing the lath at right angles to the channels, hooking the clips over the top flange of the channel and inserting the lath edge into the prongs of the clip. End joints shall fall under the channels and shall be staggered in alternate courses.

J. TRUSSTEEL Stud ROCKLATH Partition

Runner tracks shall be aligned accurately according to partition layout and secured to concrete slabs with ½″ concrete stub nails not more than 24″ on center, or wire-tied to suspended ceilings not more than 16″ on center. Where TL-3 Finisher Clips are to be used at ceiling angles, runner track must be secured to concrete slab with firm attachment equivalent to power driven anchors spaced not more than 24″ on center. Use runner track at top of door frames and over and under borrowed lights.

Studs shall be placed vertically in the runner track not over 16″ on center and each stud shall be secured to runner track with two attachment shoes both at top and bottom. Each pair of attachment shoes shall be wire-tied around stud with double strand of 18-gauge galvanized tie wire. Use two ties for stud shoe attachment on studs adjacent to and over door or light frames.

Studs shall be located approximately 2″ from all door frame jambs, abutting partitions, or other construction. With steel frames, an additional anchorage stud is required at each jamb. All corners shall be framed with a stud approximately 2″ from each side of the internal angle. Securely wire-tie studs adjacent to door or light frames to the jamb anchors. Brace and align studs adjacent to frames with horizontal ¾″ channel wire tied to each stud 4″ to 6″ over top of frame.

Light frames, in addition to anchor inserts in the side jambs, shall have anchor insert clips in head and sill sections not over 24″ o.c. to provide attachment for runner track or studs used as runners.

Use runner track at head of frame to receive studs over opening, runner to turn up 4″ each side at the jambs and wire-tied to studs used as door frame struts. Secure studs to angle inserts by engaging in notches and wire-tying securely in place, using double strand of 18-gauge tie wire.

Start lath application at the bottom with long dimensions of ROCKLATH at right angles to the stud. The first course of lath shall be set in TL-2 Starter Clips spaced approximately 16″ o.c. along the runner track and secured to the studs by TL-1 Field Clips hooked around the stud and over the top of the lath. The end joints of the ROCKLATH shall occur between studs, staggered in alternate courses, and joined together at corners with B-1 BRIDJOINT Clips.

Where wood grounds are wire-tied to the studs the lath shall be held in place by driving a nail into the ground at each stud with the nail head flush against the lath.

Succeeding courses of ROCKLATH shall be attached to studs using TL-1 Field Clips. B-1 Clips shall be inserted at all ROCKLATH and joints. TL-3 Finisher Clips shall be installed at juncture of wall and ceiling in accordance with manufacturer's recommendations.

In areas where plaster chalkboard or tackboard are to be used, install USG 7-A curved point base screed or casing bead, wire tied to the lath, to outline the chalkboard and tackboard areas. All corner joinings should be properly mitered. The 1″ ground on the base screed shall face the chalkboard and/or tackboard surface. All screed installation should be level or plumb unless specifically indicated.

The course of lath immediately over metal frames shall be set in a groove provided in the grout, if grout is used or shall be set in TL-2 Clips clipped to the runner track, or shall be wire-tied to the studs over a nail on the face of the lath.

Cornerite shall be used on all internal angles, and corner bead at external corners, by stapling to ROCKLATH plaster base. Metal lath reinforcement over frame corners shall be 13½″x19″ pads or 9″x48″ strips of 2.5 lb. self-furring lath stapled to ROCKLATH plaster base.

NOTES: RELATED INCLUSIONS

Door and Light Frames

Under appropriate section of the specification indicate metal door and light frames shall be formed of not less than 16-gauge steel, shop primed. Secure anchorage to the floor shall be by two power driven anchors or equivalent attachment through a clip at each jamb that is welded each side of jamb face and to flange returns or to flanges to prevent rotation. Anchor inserts shall be welded in each jamb to face and flange returns or to flanges at top, 12″ down from *top and then at approximately 24" o.c.*

Finished width of partition will be 2" over nominal stud width and door frames must be furnished to provide required over-all thickness out-to-out of plaster.

If wood door bucks are to be used under appropriate section of the specifications call for rough bucks of same width as studs, and of not less than 1⅝" stock with the jambs running to underside of construction above and well anchored top and bottom.

Base or Grounds

Under appropriate section of the specification call for base or grounds as follows:

For USG 2½" Metal Base, specify the attachment of the base with USG Stud Base Clips for Metal Base wire-tied over ROCKLATH to the stud.

For portland cement base, specify a USG 7A base screed wire-tied over the ROCKLATH plaster base to the studs at indicated height and 2.5 diamond mesh strip lath stapled to ROCKLATH to receive portland cement plaster. For terrazzo specify terrazzo base strip.

For wood base, specify a ⅞"x2½" wood ground strip wire-tied to the studs over stud shoes.

For asphalt tile base cemented to plaster, specify either a ½" x 1" wood ground strip wire-tied over ROCKLATH to studs, or a plaster screed, to insure ½" plaster over ROCKLATH plaster base.

Wherever metal trim is to be applied over the plaster, such as for chalk-boards, plaster screeds should be required to provide true surfaces to receive trim. Attachment clips should be toggle bolted in place.

Fixture Attachments (See Detail, pages 7 & 8.)

Plaster Chalkboards—Chalkboards may be formed on any wall by outlining the board area with bead or casing, applying a high strength, dense basecoat of gypsum plaster to the thickness provided by this trim and finishing with a hard, dense Structo-gauge lime finish coat power trowelled to a smooth uniform surface. This surface is finished with one coat of primer sealer and two coats of chalkboard paint. (For plasters see USG Gypsum Plasters folder, AIA 21-A.)

K. 2" Solid ROCKLATH and Plaster Partition

Metal Base shall be attached to rough floor by nailing clips not over 24" o.c. according to partition layout. Snap side plates over clips, cutting and bending at corners as required. (If wood floor runner is used, specify in carpentry section.)

Ceiling Runner shall be properly aligned over floor runner and securely attached.

Tie-In Shoes shall be attached to exterior walls, columns, abutting partitions, etc., by nailing, wire tying or stapling, as required, at third points of partition height.

ROCKLATH Plaster Base shall be cut in lengths to allow ¼" minimum and 1¼" maximum top clearance in the ceiling runner. The ROCKLATH shall be erected vertically, engaging the bottom in the groove of floor runner and either tying or clipping top to ceiling runner. Vertical edges of ROCKLATH shall be kept as plumb as possible and the V-joint edges be brought into close contact one with the other. No vertical cut edges of lath shall be used in the central portion of partition. The use of lath having cut edges shall be confined to the ends of the partition or at door bucks. ROCKLATH shall be neatly cut for electrical conduit, other piping or door struts, and one side shall be covered with paper-backed metal lath fastened to the ROCKLATH. In cases where flexible electrical cable is fastened to the face of the lath or where other piping or door struts extend beyond the face of the lath, provision must be made for a full ⅜" thickness of basecoat plaster over them. Where ROCKLATH Plaster Base intersects other partitions, exterior walls or columns, it it shall be wire tied or fastened to tie-in shoes at the third point of height.

For partitions not over 9'0" in height, bracing shall consist of ¾" cold rolled channels erected horizontally, with flanges turned down, just below mid-point of height. The bracing member shall extend the full length of the partition and shall be fastened to the lath by the use of tie wires looped over the channel, or USG wire bracing clip, at center of the lath in such a manner as to keep the lath joints together as well as securing the channels to the lath. It shall be similarly wire tied or clipped to the lath at channel ends.

For partitions over 6'0" in length, the horizontal braces shall be reinforced by vertical struts every 6'0" or fraction thereof formed from 1½"x1½" angles (or heavier materials) fastened securely at the bottom and wedged firmly against the construction at the head. Vertical struts shall be securely wire tied to horizontal braces.

For partitions over 9'0" in height, two horizontal braces at third points shall be used. Attach to lath in a similar manner as above.

Seasoned wood bracing members may be used in lieu of metal bracing, provided they are attached in a similar manner to hold lath rigid during initial plastering stages.

Pipe chase hollow partitions shall be constructed using two ceiling runners and two floor runners, erected to provide hollow space indicated on the plans. Horizontal ¾" channels shall be erected at third points of height and secured to (tie-in shoes at third points of height of abutting partitions) (vertical ¾" channels erected at both ends of pipe chase) and to intermediate vertical ¾" channels not over 4'6" o.c. Horizontal channels shall be cross-braced not over 30" on center with channel brackets, wire tied to horizontal channels. Long length ROCKLATH, ½" thick and V-edge, shall be set in floor runner, clipped or wire tied to ceiling runner, and wire tied over a nail to each intermediate horizontal channel.

NOTES: RELATED INCLUSIONS

Door Frames—*Shall be as specified elsewhere. Wood frames shall be milled according to details, of select stock, resistant to splitting and prime coated if stop is integral with the frame. Wood floor runner may be used as rough buck if separate jamb plus casing is to be used. After* ROCKLATH *Plaster Base is set in the groove, 8d coated nails shall be driven in at a 45° angle each side, approximately 12" o.c., and bent over against the lath for subsequent anchorage in the plaster. Separate bracing is required to keep buck in alignment with partition and, in addition, a door templet will be required when integral finish is used.*

Steel frames shall be furnished with clip inserts for centering ROCKLATH *in partition. If door frame struts are furnished, they shall not exceed ⅝" in size in direction of partition thickness.*

Fixture Attachment—*Lightweight fixtures and trim shall be installed by drilling set dry plaster to a minimum depth of ¾" and inserting a plastic plug for anchorage of attachment screws.*

Cabinet and shelving grounds shall consist of ¾" (actual dimension) by 1½" wood strips, having 6d (minimum) coated nails driven ⅝" into both edges at not over 12" o.c., attached to the ROCKLATH *by nailing, wire tying or bolting.*

Lavatory and sink hangers on solid partitions shall be installed by wire tying an 18 gauge perforated plate of size equal to hanger (maximum 6"x24") to opposite side of the lath and placing hanger bolts prior to plastering.

Ceramic Tile—*(Where ceramic tile is required over* ROCKLATH, *self-furring diamond mesh metal lath shall be stapled over the* ROCKLATH *plaster base with staples spaced approximately 8" on center, horizontally and vertically, and portland cement-lime plaster shall be applied in scratch and brown coats to ⅝" grounds over lath as a base for the ceramic tile) or (Ceramic tile shall be adhesively attached over the finished gypsum plaster in accordance with adhesive manufacturer's specifications.)*

Electrical Work — *Electrical conduit and outlet boxes shall be as specified elsewhere. Switch boxes and convenience outlet boxes shall not exceed 1½" in depth and, if plaster ring is used on 4"x4" convenience outlet boxes opening one side only, the box shall not exceed 1¼" in depth, to provide ½" of plaster on the back side. Electrical conduits or cables shall be placed so that a full ⅜" thickness of basecoat plaster can be applied over them.*

L. Exterior Wall Furring System

Single Metal Base shall be attached to rough floor by nailing clips not over 24" on center. Snap the side plate over the clips, cutting and bending at corners as required. (Alternate: Wood runner shall be attached to the rough floor by nailing with cut nails or concrete stub nails in the center groove or through alternate outside edges not over 16" on center.) (If metal base is used, base must be grouted before erection of lath.)

Attach ceiling runner to the construction above as required, plumbing up from the floor runner, or install furring channel 6" from top as specified below.

Attach furring brackets, with serrated edges up, to the masonry walls not over 4" from columns or other abutting construction and not over 36" on center horizontally and vertically, and as required above and below windows, using (one 2" cut nail in mortar joints of brick, clay tile, or cement block or in the field of lightweight aggregate blocks) (⅝" concrete stub nails or power driven nails or other suitable fasteners in monolithic concrete). Fastenings shall be driven through top hole of bracket. Furring channels shall be laid horizontally on the furring brackets with the legs down, plumbed to a line with the ceiling runner and base, and wire tied to the bracket with a double strand of 18 gauge tie wire. Excess bracket length shall be bent down.

Long length, ⅜" Insulating ROCKLATH shall be applied with the long length vertical and butted lightly, with the foil facing the furred space, by setting bottom of lath in the groove of the base grout, clipping top of lath to the ceiling runner and wire tying over a nail at the edges to intermediate horizontal channel furring. Cut and fit gypsum lath to allow slight clearance around window frames. Apply a 3" strip of metal lath over each ROCKLATH joint over and under windows.

M. Column Fireproofing ROCKLATH and Plaster

(Note to Architect: *For 1, 1½, 2 or 3 hour fire rating, use following lathing specification.)*

Apply ⅜"x16"x48" Perforated ROCKLATH vertically against the column flanges and bridging the web spaces, cut as required, fastened with double strands of 18 gauge galvanized tie wire located approximately 2" from ends of the lath and about 15" on center at intermediate points and wrapped around the perimeter of the column. USG 1A Expanded Flange Corner Bead shall be set at each corner to establish (½") (⅝") (1") (1¾") plaster thickness over the ROCKLATH plaster base by wire tying to the double strands of 18 gauge wire.

Note to Architect: *For 4 hour Fire Rating, use following lathing specification:*

Apply a double thickness of ½"x24" long length ROCKLATH vertically against the column flanges and bridging the web spaces, cut as required and fasten with a double strand of 18 gauge galvanized tie wire located about 4" from top and bottom and 24" on center at intermediate points and wrapped around perimeter of column. One inch hexagonal 20 gauge galvanized wire fabric shall be wrapped tightly around the column over the ROCKLATH. USG 1A Expanded Flange Corner Bead shall be wire tied to each corner to provide 1½" plaster ground over the ROCKLATH plaster base.

Notes to Architect: *Paragraphs I, II, etc., are recommended as basic requirements for all metal lathing specifications. Paragraphs S-1, S-2, etc., apply to the erection of lath for various constructions and only those applicable to the job should be included.*

Where lath and plaster ceilings are located under roof construction, it is recommended that the space thus established be ventilated. Such ventilation, with or without vapor barrier and insulation, shall be designed in accordance with accepted engineering practice.

Where reinforced concrete or concrete fireproofed structural steel framing is used, it is recommended that partitions be located so that at least a 1" offset in plaster face is provided at juncture of partitions with columns and/or beams, or that either of the following procedures be employed:

1. Furring off the face of such members so that there is at least 1" between back of metal lath and such faces.

2. By scatter nailing, 12" o.c., No. 30 asphalt felt and the metal lath across the faces of such structural members.

Where sound Transmission Loss is a design consideration, use sand aggregate to provide mass for maximum sound transmission loss.

When sound is a major factor, contact your U.S.G., Architecture Service Representative or the Architect Service Dept., Chicago, for recommendation.

I. SCOPE

Unless otherwise indicated, all lathing and furring shall be of metal, as herein described. (Or enumerate the areas.) Partitions shall be accurately located as shown on plans.

II. GENERAL CONDITIONS

In cold weather, buildings shall be glazed and heated before lathing.

III. MATERIALS

Unless specifically noted otherwise, all materials herein listed shall be protected by a coat of rust inhibitive paint after fabrication, bundled or packaged with positive identification.

A. Metal Lath

Shall be USG metal lath, manufactured by the United States Gypsum Company, made from copper alloy steel sheets. Lath shall be colored to identify weight (red for 3.4, white for 2.5 diamond mesh and 2.75 flat Rib Lath: yellow for 4.0 Rib Lath) and shall be provided in the following types and sizes:

(2.5 lbs.) (3.4 lbs.) USG Junior Diamond Mesh Lath —size: 27" x 96".

(3.4 lbs.) USG Junior Diamond Mesh Lath galvanized —size: 27" x 96".

(2.5 lbs.) (3.4 lbs.) USG Junior Diamond Mesh—self-furring lath—size: 27" x 96".

(2.75 lbs.) (3.4 lbs.) USG 4-mesh Z-Rib Lath—size: 27" x 96".

(3.4 lbs.) (4.0 lbs.) USG ⅜" Rib Lath—size: 27" x 96".

(1.8 lbs.) (3.6 lbs.) USG Expanded Metal Stucco Mesh—1⅜" x 3⅛" mesh.

B. Lathing Accessories

1. Channels shall be 16-gauge cold rolled steel channels, as manufactured by the United States Gypsum Company.

(a) ¾", weighing not less than 300 lbs. per 1,000 lineal feet.
(b) 1½", weighing not less than 514 lbs. per 1,000 lineal feet.
(c) Other (see table, page 12).

2. Pencil Rods for furring shall be not less than ¼" in diameter and of mild steel.

3. Hangers shall be (8-gauge) (9-gauge), galvanized annealed steel wire, (3/16") (¼" Rods) (3/16" x 1" mild steel flats).

4. Tie Wire shall be 16-gauge and 18-gauge galvanized annealed steel wire, as specified herein.

5. Corner Bead—Shall be USG, as follows:
1-A Expanded Corner Bead
4-A Flexible Corner Bead
5-A Bull Nose Corner Bead
10-A Expanded Bull Nose Corner Bead

6. Corner Bead Clips—Shall be USG No. 9-A Corner Bead Clips—galvanized steel.

7. Base Screed—Shall be USG
3-A Expanded Base Screed
6-A Plain Base Screed
7-A Curve Point Base Screed
8-A Picture Mould

8. Casing Bead—Shall be USG
No. 4 Expanded Flange Quarter Round
No. 138 Short Flange Quarter Round
No. 60 Expanded Flange—Semi-Square
No. 60 Short Flange—Semi-Square
No. 66 Expanded Flange—Square
No. 66 Short Flange—Square

9. Cornerite—Shall be USG Selv-edge Cornerite, (2″ x 2″) (3″ x 3″).

10. Striplath—Shall be USG Selv-edge Striplath, (4″) (6″).

11. 2″ Partition Terminal—Shall be composed of a cap formed of 18-gauge steel, welded to 24-gauge punched runner, as manufactured by United States Gypsum Company.

12. Metal Studs—Shall be TRUSSTEEL studs, manufactured by United States Gypsum Company, formed with not less than 7-gauge wire. Stud sizes shall be as indicated on drawings or as follows: (1⅝″) (2½″) (3¼″), (4″), (6″).

13. TRUSSTEEL Stud Runner Track—Shall be: (Regular track and shoes) (snap-in runner track).

14. Ceiling Runner—As manufactured by United States Gypsum Company shall be:
L Type
Z Type

15. Metal Base—Shall be 2½″ high, face plate formed from 18-gauge steel, weighing not less than 600 lbs. per 1,000 lineal feet and as manufactured by the United States Gypsum Company complete with:
Splice plates
Single base clips for furred walls
Double base clips for 2″ solid partitions
Combination stud base clips for TRUSSTEEL Stud partitions
Masonry base clips for masonry walls

16. Floor Runner and Screed—Shall be a combination base and screed as manufactured by the United States Gypsum Company.

17. Metal Lath Resilient Clips—Shall be as manufactured by the United States Gypsum Company:
No. 100 for Suspended Ceilings
No. 200 for Wood Studs and Joists
No. 400 for TRUSSTEEL Studs
No. 500 for Masonry walls

18. Wall Furring Brackets—Shall be USG galvanized steel adjustable wall furring brackets.

19. Access Panels—Shall be USG Steel Access Panels in sizes shown on details (furnished by others but installed under this section).

IV. GROUNDS

Unless otherwise specified, grounds shall be set to provide not less than ¾″ thickness of plaster measured from the flat portion of the back plane of the metal lath exclusive of ribs and be securely wire tied or nailed into place. (Note: Greater thicknesses are required for certain fire ratings.)

V. ERECTION OF METAL LATH

All metal lath shall be applied with the long dimension of the sheet across the supports. Rib lath shall be applied with the projections against the supports.

The ends of all lath shall be lapped not less than 1″. If end laps are made between supports, they shall be adequately laced or tied with No. 18-gauge tie wire. The sides of diamond mesh lath shall be lapped not less than ½″. The sides of rib lath shall be lapped by nesting outside ribs. Side laps shall be secured to every support unless otherwise specified, and shall be wire-tied between supports not to exceed 9″ intervals. All metal lath except ⅜″ riblath shall be started at one support away from the corner and be bent into the corner and carried on to the abutting wall. Where ⅜″ rib lath is used, it shall be butted into the corners and cornerite shall be applied over the abutting lath and wired at 6″ intervals along each edge in corners; cornerite shall be wire-tied along the edge only, not in the corner. All metal lath shall be placed so that the lower sheets overlap the upper sheets. Wherever possible, ends of lath in adjacent course shall be staggered.

Metal lath shall be secured to supports with 18-gauge tie wire at intervals not exceeding 6″. Ends of tie shall have three full twists, then bent up in the plane of the lath.

Corner Beads, Casing Beads, Base Screeds, Picture Molds, etc., shall be positioned by securely wiring to the metal lath at not more than 12″ intervals. Attachment to masonry or other solid construction shall be by nailing at intervals of not more than 12″. ½″ concrete stub nails shall be used for attachment to concrete.

VI. ERECTION OF GRILLAGES

A. Hangers shall be spaced not over (3′-0″) (3′-6″) (4′-0″) in the direction of the main runners and not over (4′-0″) (3′-6″) (3′-0″) in the direction at right angles to the main runners, and within 6″ of the ends of main runner runs and of boundary walls, girders or similar interruptions of ceiling continuity.

All hangers shall be of such lengths to (wrap around or be securely attached to steel beams or joists) (provide suitable anchorage in concrete by attachment to reinforcing steel, or by being looped and embedded 2″ in concrete) and to provide for full saddle tie to main runner at indicated height.

B. Main runners shall be placed not over (4′-0″) (3′-6″) (3′-0″) on center, properly positioned relative to the indicated ceiling height, leveled and hangers shall be saddle tied along runner.

Main runners shall not be let into nor come in contact with abutting masonry walls. Runner channels shall be located within 6″ of the walls to properly support the cross furring.

At main runner splices, the ends shall be overlapped not less than 12″, with flanges of channels interlocked, and securely tied near each end of the splice with double loops of No. 16 gauge tie wire.

C. Cross furring channels shall be spaced (12″) (13½″) (16″) (19″) (24″) and securely saddle tied with two strands of 16 gauge tie wire to (main runners) (steel joists).

Cross furring shall not be let into or come in contact with abutting masonry walls.

At splices of cross furrings, the ends shall be overlapped not less than 8″, with flanges of channels interlocked, and securely tied near each end of the splice with double loops of No. 16 gauge tie wire.

S-1. Nailing to Wood Supports

Metal lath shall be secured to framing at intervals not to exceed 6″ o.c. by one of the following methods:

1. Metal lath shall be attached to vertical (walls) framing members with:

(a) 4d common nails driven to ¾″ penetration and bent over to engage at least three strands of diamond mesh lath or a rib of rib lath.

(b) 1″ roofing nails, 7/16″ head, driven home and so as to engage at least two strands of diamond mesh or through the rib of rib lath.

(c) 1″, 14-gauge wire staples, driven home without crushing the lath strands and engaging at least two strands of diamond mesh lath or through the rib of rib lath.

2. Metal lath shall be attached to horizontal (ceiling) framing members with: 1½″, 11-gauge barb roofing nails with 7/16″ head, to engage at least two strands of diamond mesh or through the rib of riblath. Spacing of nails not to exceed 6″ o.c.

S-2. Nailing to Nailable Steel Supports

Metal lath shall be secured to framing at intervals not to exceed 6″ o.c. with nails of size and type recommended by manufacturer of nailable steel supports.

S-3. Metal Lath Secured to Steel Joists

Metal lath shall be secured to the lower flanges of steel joists with one loop of 16-gauge tie wire, or two loops of 18-gauge tie wire, at intervals not to exceed 6″ o.c. Ends of tie wire shall be given at least three twists.

S-4. Metal Lath Attached to Rib Concrete Construction

Hangers for attaching metal lath directly to the underside of concrete joists form construction shall be provided with a loop or other deformation to positively enter the concrete or be secured to the reinforcing steel.

They shall be of not less than (2 strands of No. 14-gauge galvanized annealed wire when twisted as for tie wire) or (No. 10-gauge galvanized wire when struck over to support the lath). Hangers shall be spaced at not-to-exceed 5″ intervals along bottom of the joist.

Where spacing of concrete ribs exceeds 24″ center to center, there shall also be placed in the forms 12 gauge galvanized wire hangers midway between the concrete ribs, spaced not to exceed 36″ on centers. ¾″ furring channel shall be positioned parallel to the ribs and vertically as required by the indicated ceiling heights by saddle tying to these hangers. Metal lath shall be ⅜″ rib lath weighing not less than 3.4 lbs. sq. yd., securely attached to the underside of the concrete joist by twisting the No. 14-gauge wire hangers as for tie wire, or by clinching of other types of hangers, and by tying to the channels with No. 18-gauge galvanized annealed wire at intervals not exceeding 6″ o.c. A tie wire shall be placed at side laps of sheets between supports. Where spacing of concrete joists does not exceed 24″ center to center, the ⅜″ rib metal lath shall be securely attached to the undersides of the concrete joists by twisting the No. 14-gauge wire hangers as for tie wires or by clinching of other types of hangers.

S-5. Furred Ceiling on Wood Joists

16d common nails spaced to conform to spacing of furring members, shall be driven horizontally through each joist at least 2″ above the lower edge; the point and head to project equally from each side of joist.

Furring channel shall be attached at right angles to, and flush against, the bottom edge of the joists. Spaced at (12″), (13½″), (16″), (19″) or (24″). Channel shall be secured by wire tying to each nail with (two strands of 16 gauge) or (four strands of 18 gauge) galvanized wire or other approved attachment of equal strength. Metal lath shall be attached to the steel furring with wire ties at intervals not to exceed 6″.

S-6. Furred Ceiling on Steel Joists

Furring members shall be ¾″ cold rolled channels and shall not exceed a spacing of (12″) (13½″) (16″) (19″) (24″) and shall be erected at right angles to the steel joists. They shall be securely attached to the bottom flanges with (two strands of 16-gauge) or (four strands of 18-gauge) galvanized wire or other approved attachment of equal strength.

S-7. Metal Lath Vertical Furring

USG Adjustable Wall Furring Brackets shall be attached to the masonry walls not over 4″ from columns or other abutting construction, and not over 36″ on center vertically and horizontally, and as required above and below windows, using one 2″ cut nail in top hole of bracket in mortar joints of brick, clay tile, or cement block or in the field of lightweight aggregate blocks, or using ⅝″ concrete stud nails or power-driven nails in monolithic concrete. In masonry construction, brackets can be embedded in mortar joints as masonry is laid. Furring channels shall be laid horizontally on the furring brackets with the legs down, and wire-tied to the bracket with a double strand of 18-gauge tie wire. Excess bracket length shall be bent down.

Vertical members shall be not less than ¾″ cold rolled channels. They shall be spaced (12″) (13½″) (16″) (19″) (24″). They shall be securely saddle-tied to horizontal members with a double strand of 16-gauge wire at each crossing, and shall be securely anchored to the floor and ceiling construction. Optional—Vertical ¾″ channels may be secured to horizontal ¾″ channels placed 6″ from the floor and/or top of vertical channels. These horizontal channels to be secured to the wall in the same manner as specified previously.

(Note: Where dampproofing has been damaged in installation of attachments, it shall be pointed up with the same material before proceeding with the installation of the furring.)

S-8. Channel Studs, Metal Laths and Plaster SOLID PARTITION

Studs shall be not less than ¾″ cold rolled channels spaced (16″) (24″), securely anchored at floor by:

(Engaging tongue of the USG Double Metal Base Clip.)

(Engaging slot in USG floor runner and screed.)

(Bending ends of studs and nailing directly to concrete floors with concrete stub nails or nailing to wood runner fastened to floor.)

(Setting in holes of Z type ceiling runner nailed to wood runner or floor.)

(Wire tying to L type ceiling runner nailed to wood runner or floor.)

Studs shall be securely fastened to the soffit of the floor or roof above, or to the joists or to a suspended ceiling by:

(Inserting in Z type ceiling runner nailed or wire-tied to ceiling.)

(Wire tying to L type ceiling runner nailed or wire-tied to ceiling.)

(Punching studs through ceiling lath and wire-tying to furring channels.)

Top clearance shall be such that studs will not bow when erected.

Where 2-piece studs are necessary, they shall be spliced by lapping not less than 8″, with flanges interlocked, and securely wire tying 1″ from each end of splice.

Studs adjacent to openings shall be securely anchored to the frames or studs adjacent to frames may be omitted if other means of anchoring lath is provided and bucks are temporarily braced before plastering. Where wood bucks are used, 8d nails shall be driven in pairs into both jambs of the wood buck at intervals of 2′, beginning 9″ above floor, and channel studs securely wire-tied to the nails.

A horizontal reinforcing (⅛″ by 1¼″ flat iron) (⅜″ diameter rod) shall be saddle tied to the channels 8″ above top of door to the channel side and extend continuously past the first studs at full spacings beyond the line of door frame or buck.

Metal lath shall be secured, one side only, to each channel stud by 18-gauge galvanized tie wire at 6″ ntervals.

S-9. Studless Metal Lath and Plaster Solid Partitions

USG Metal Base (USG floor runner and screed) shall be securely attached to the floors by means of fasteners suitable to floor materials. (If wood runner is used specify in carpentry section.)

L-Type ceiling runners shall be located so that the metal lath will be in the center of the partitions and plumb. (Runners shall be fastened to concrete ceilings with stub nails or other approved means.) (Runners shall be fastened to metal lath ceilings with wire-ties at approximately 12″ spacings.)

3.4 lb. ⅜″ rib lath shall be erected with the long dimension of the sheet vertical (attached to floor runners) (Set in groove of grouted metal base assembly) and securely anchored to ceiling runners with wire ties 8″ o.c.

A wire tie shall be placed, approximately 9″ oc, where sheets nest. (Metal lath shall be wire tied to inserts of steel door frames.) (Where wood bucks are used, metal lath shall be wire-tied to USG L-type runner nailed not over 8″ o.c. to back of buck.)

Temporary bracing—Bracing shall be not less than ¾″ C.R. channel placed horizontally near mid-height of partition, tied to metal lath at 24″ o.c. and with 1½″ angle braces placed vertically not over 6′-0″ on centers. Wedge vertical braces at top and bottom and tie to ¾″ horizontal channel to hold lath in vertical position.

(**Note to Architect:** *Where metal door frames are used, they shall be furnished with inserts to which the metal lath can be wire-tied.*)

S-10. USG Metal Base

Metal base shall be notched to a neat miter in forming all angles. In continuous runs, ends shall be evenly butted and internally spliced with splice plates. Base shall be securely held in place by clipping to base clips at:

(16″ o.c. (TRUSSTEEL Studs) (Channel)
(24″ o.c. studless solid plaster partitions)
(12 to 16″ o.c. masonry walls)

Base clips shall be secured by nailing to floor or masonry walls.

S-11. Metal Lath Resilient System

USG Metal Lath Resilient System, where shown on plans or otherwise indicated in this specification, shall be:

(a) Suspended ceiling grillage. ¾″ channels shall be supported on USG clip No. 100, spaced (13½″) (16″) o.c. along the 1½″ carrying channels.

(b) Wood stud and joist framing spaced not over 16″ o.c. USG No. 200 clips shall be spaced 12″ o.c. along joists and attached with 4d common nails. USG No. 200 clips shall be spaced not over 16″ o.c. along the studs and attached with 4d common nails. ¼″ pencil rods shall be attached to inside of tongue on the clips and metal lath wire-tied to the pencil rods.

(c) TRUSSTEEL stud partitions. USG No. 400 clips shall be spaced not over 16″ o.c. along stud. A ¼″ pencil rod shall be attached to the notch on the flange of the clip.

(d) Masonry walls. USG No. 500 clips shall be spaced not over 18″ o.c. vertically supporting ¾″ furring channels not over 16″ o.c. USG No. 500 clips shall be attached to (gypsum tile with 2″ staples or 10d cut nails driven through hole in clip into solid section of tile) (brick or clay tile or masonry walls with 10d cut nails driven through hole in clip into the mortar joint). Channels shall be wired to the inside of the tongues of the clips with the legs of the channels against the clip. Metal lath is then wire-tied to the channels.

S-12. TRUSSTEEL Stud Partitions

Unless otherwise specified, all interior non-load-bearing partitions shall be (1⅝″) (2½″) (3¼″) (4″) (6″) TRUSSTEEL Stud partitions. TRUSSTEEL Stud runner tracks shall be aligned accurately according to partition layout and securely attached to floor and ceiling construction. Studs shall be erected vertically not to exceed (16″ o.c.) (19″ o.c.) (24″ o.c.) (depending on type and weight of lath used) (1⅝″ studs to be spaced a maximum of 16″) secured to floor and ceiling runner track according to manufacturer's recommendations. Framing shall provide studs located approximately 2″ from abutting partitions or wall constructions, at all openings and 2″ from each side of all internal angles. Securely wire-tie door frame anchors to the adjacent studs. Metal lath shall be wire-tied to the stud 6″ o.c. Brace and align studs adjacent to frames with a ¾″ horizontal channel wire-tied to each stud 4″ to 6″ over top of frame.

Related Inclusions

Door and Light Frames. Under appropriate section of the specifications indicate that metal door and light frames shall be formed of not less than 16 gauge steel, shop primed. For door frames secure anchorage to the floor shall be by 2 power driven anchors or equivalent attachment through a clip at each jamb that is welded to each side of the jamb face and flange returns or between the flanges, to prevent rotation. Anchor insert clips shall be welded in each jamb to jamb face and flange returns or to the flanges, at the top, 12″ down from top and then approximately 24″ o.c. using not less than 4 clips per jamb.

Light frames, in addition to anchor inserts in the side jambs, shall have anchor insert clips in head and sill sections not over 24″ o.c. to provide attachment for runner track or studs used as runners.

Frames shall be so designed to provide for finished plaster partition width and to permit the lath and plaster to enter into the frame even when grouted.

S-13. Beam Fireproofing

For beams and girders, framework shall be formed to contour in size shown on drawings, of ¾″ channels as follows:

(a) Where ¾″ channels are used for longitudinal furring, brackets shall be not more than 3′-0″ apart.

(b) Where ¼″ pencil rods are used, brackets shall not exceed 19″ apart.

(c) Where longitudinal furring is not used, brackets shall not exceed 13½″ on centers for 3.4 lb. diamond mesh metal lath, provided that at least one row of longitudinal channel shall be installed to hold work in proper shape.

Brackets shall be saddle tied to structural members with not less than four strands of No. 16 gauge wire. For tying longitudinal members to brackets, wire shall be not less than 16 gauge galvanized wire, and, for tying metal lath to rods or channels, wire shall not be less than 18-gauge galvanized wire.

Brackets shall be formed in accordance with details furnished by the architect. Brackets shall be securely wired, bolted or clamped to walls, ceilings, or structural members, as the case may require. For fastening brackets to various bases adequately strong anchorage shall be provided.

Metal lath shall be applied to the longitudinal channels or rods or direct to brackets and made to conform with the outline of the finished beam or cornice. Side laps shall not occur at the corners, but lath shall be carried around to the next members or corner strips shall be used at all corners.

S-14. Column Fireproofing

Lathing for fireproofing of columns shall be done by (applying self-furring diamond mesh lath formed to neatly fit the column and wire tied not over 6″ o.c. at all laps) (installing ¾″ channel brackets and studs properly spaced to provide design lines shown or to enclose pipes and ducts, as required. Attach diamond mesh metal lath wire tying it to channels with 18-gauge tie wire spaced not over 6″ o.c.). No. 1-A corner beads shall be wire tied to metal lath so as to provide plaster thickness specified or shown.

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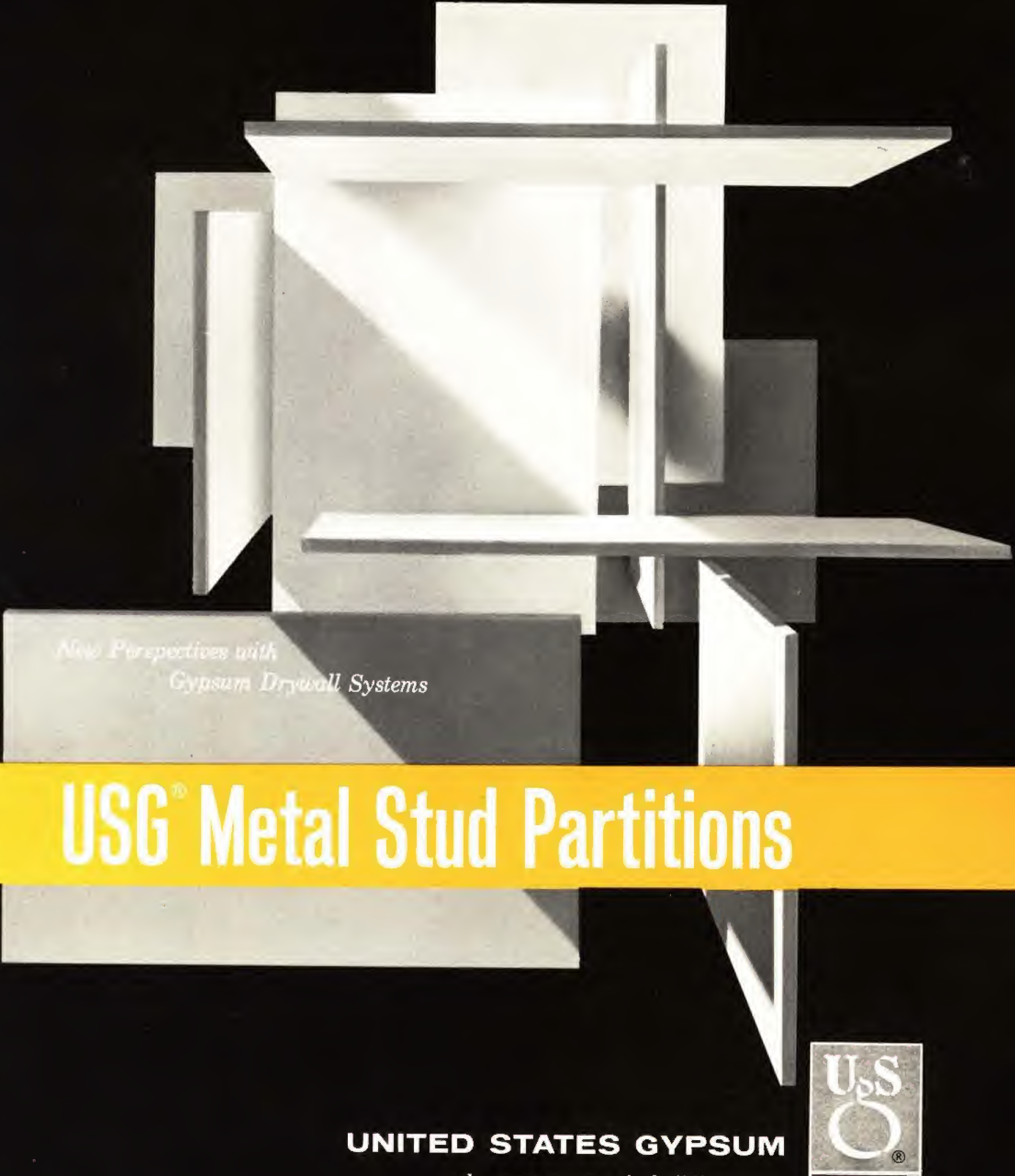

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USG® Metal Stud Partitions

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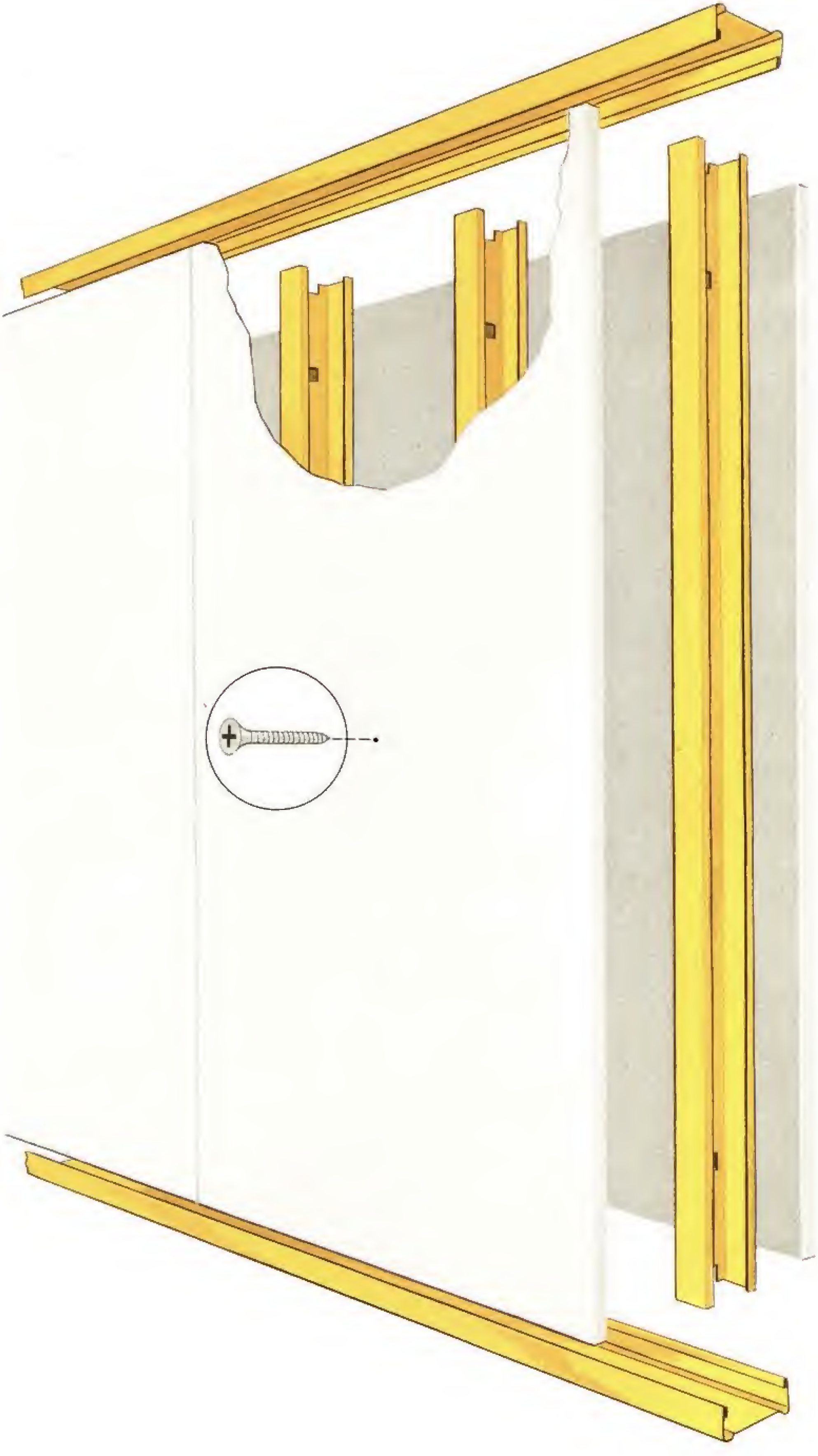


- *Completely new—opens new design possibilities*
- *One- to two-hour fire ratings*
- *Ceiling heights up to 16 feet*
- *Adaptable to all types construction*
- *Three versatile stud widths: 1⅝", 2½", 3⅝"*

DESCRIPTION

SG Metal Stud Partitions

The USG Metal Stud Partition is a non-load-bearing construction which consists of a lightweight electro-galvanized steel channel stud, typically set in steel runner tracks at floor and ceiling, and faced each side with gypsum wallboard. A specially designed, power-driven, self-tapping steel screw with a radius contoured head is used for the application of the wallboard to the stud. The wallboard can be applied either horizontally or vertically—in single layer or double wall method.

Component Products and Accessories:

Stud—The metal channel stud is roll formed from 25-gauge electro-galvanized steel, in widths of 1⅝", 2½", 3⅝", and in lengths suitable for various job requirements. Holes are punched at each end of the stud to facilitate installation of horizontal electrical wiring or conduit.

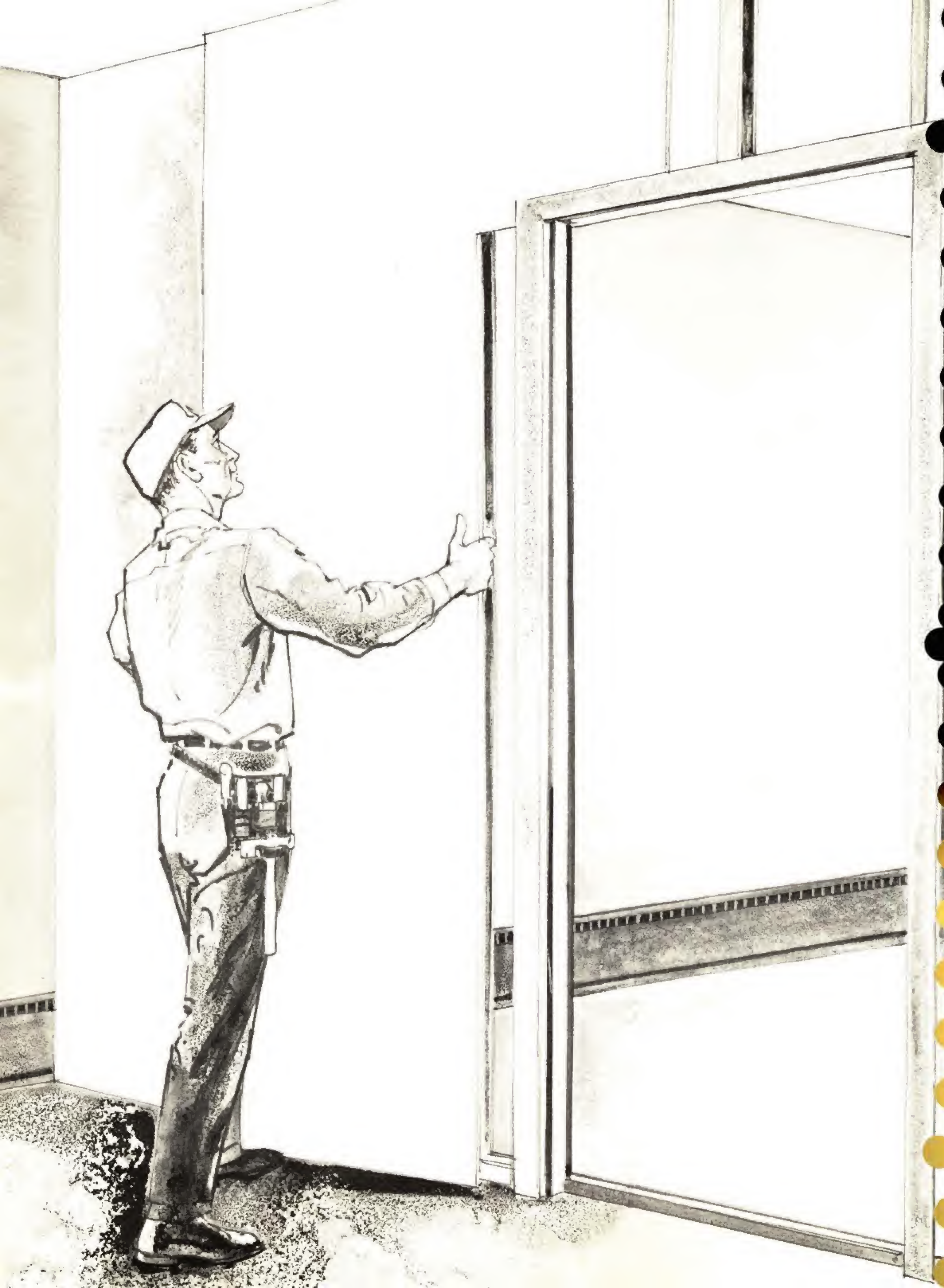
Floor and Ceiling Runners—Roll formed, 25-gauge, electro-galvanized steel runners, of width dimension corresponding to studs, provide the necessary floor and ceiling anchorage of the partition.

Gypsum Board—Single layer gypsum wallboard, ⅜", ½" or ⅝" thick, may be applied to studs. Double layers of all sizes may be applied by mechanically attaching a base layer of gypsum backing board, and laminating a face layer of regular or specialty gypsum wallboard.

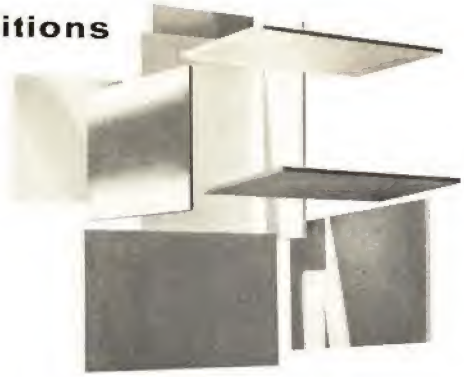
Fastener—A self-drilling, one-inch, No. 6, sheet-metal-type screw with a Phillips head is used for gypsum board attachment. It produces the optimum surface depression for proper concealment. Power-driving this screw is recommended.

Accessories—Flush and recessed metal base of special design, standard reveal-type metal base, and various angle and edge trims are available, and may be used with this assembly as design features or job conditions require.

Joint reinforcing tape, cement, and metal corner reinforcement are generally needed to complete all partition installations.



USG Metal Stud Partitions



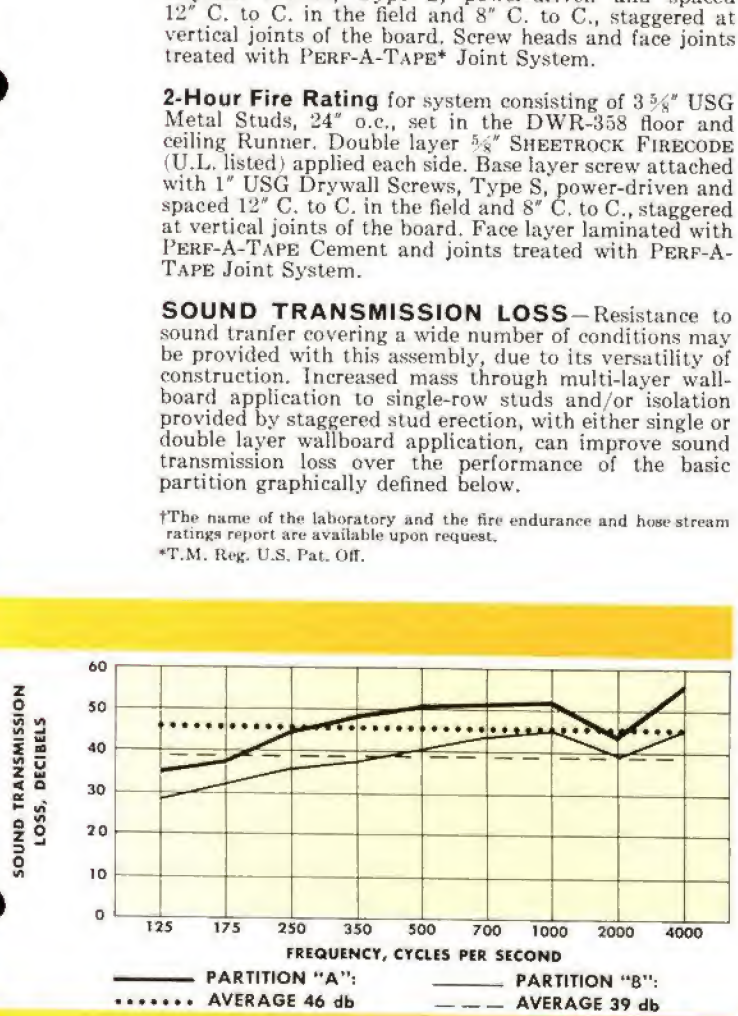
Function and Utility

FIRE RESISTANCE—USG Metal Stud Partitions consist entirely of incombustible framing and facing materials. The following fire endurance ratings have been recorded for two assemblies by a nationally-recognized fire testing laboratory†:

1-Hour Fire Rating for system consisting of 3⅝″ USG Metal Studs, 24″ o.c., set in the DWR-358 floor and ceiling Runner, with single layer ⅝″ SHEETROCK* FIRECODE* (U.L. listed) attached each side with 1″ USG Drywall Screws, Type S, power-driven and spaced 12″ C. to C. in the field and 8″ C. to C., staggered at vertical joints of the board. Screw heads and face joints treated with PERF-A-TAPE* Joint System.

2-Hour Fire Rating for system consisting of 3⅝″ USG Metal Studs, 24″ o.c., set in the DWR-358 floor and ceiling Runner. Double layer ⅝″ SHEETROCK FIRECODE (U.L. listed) applied each side. Base layer screw attached with 1″ USG Drywall Screws, Type S, power-driven and spaced 12″ C. to C. in the field and 8″ C. to C., staggered at vertical joints of the board. Face layer laminated with PERF-A-TAPE Cement and joints treated with PERF-A-TAPE Joint System.

SOUND TRANSMISSION LOSS—Resistance to sound tranfer covering a wide number of conditions may be provided with this assembly, due to its versatility of construction. Increased mass through multi-layer wallboard application to single-row studs and/or isolation provided by staggered stud erection, with either single or double layer wallboard application, can improve sound transmission loss over the performance of the basic partition graphically defined below.



Rated Assembly

Partition "A"—3⅝″ USG Metal Stud, laminated ⅝″ SHEETROCK each side, joints treated.

Partition "B"—3⅝″ USG Metal Stud, single layer ⅝″ SHEETROCK each side, joints and screw-heads treated.

ADAPTABILITY—USG Metal Stud Partitions may be used in all types of new construction—commercial, institutional, industrial and residential—or in the remodeling and alteration of existing buildings. The use of dry construction methods reduces the amount of clutter, waste and mess; consequently, normal work, during modernization, can proceed with a minimum of inconvenience and disturbance.

VERSATILITY—Depending on ceiling height, the optional use of single-layer application, horizontally or vertically, permits the most economical use of the wallboard material. Multi-layer construction may be specified for walls when greater resistance to sound transmission, fire, and increased strength are desirable.

LIGHT WEIGHT—A partition erected with 3⅝″ studs and single-layer ⅝″ SHEETROCK, screw-applied each side, weighs approximately 6.5 lbs. per square foot. This low weight factor can influence structural design requirements resulting in substantial savings.

ECONOMY—Low material cost, speed of erection, and versatility of the system provide realistic and competitive construction costs. Reduced weight, when compared to many commonly used partitions of the same thickness, can effect savings in structural design.

LIMITATIONS

1. USG Steel Stud Partitions are non-load-bearing
2. The partition should not be used where normally exposed to excessive moisture or humidity
3. The gypsum wallboard finish should be protected against wetting or moisture absorption
4. Limiting heights:

Metal Stud	Maximum Height
1⅝″	9′—0″
2½″	12′—0″
3⅝″	16′—0″

Height is *not* limited by length of unsupported run or size and location of openings.

5. Recommended stud spacings:

Single layer or base layer of Double Wall Construction	Stud Spacing
⅜″	16″ c. to c.
½″	24″ c. to c.
⅝″	24″ c. to c.

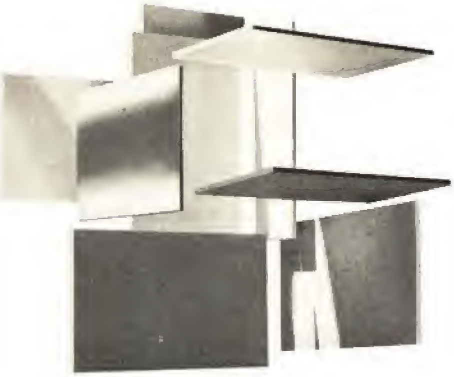
---

†The name of the laboratory and the fire endurance and hose stream ratings report are available upon request.

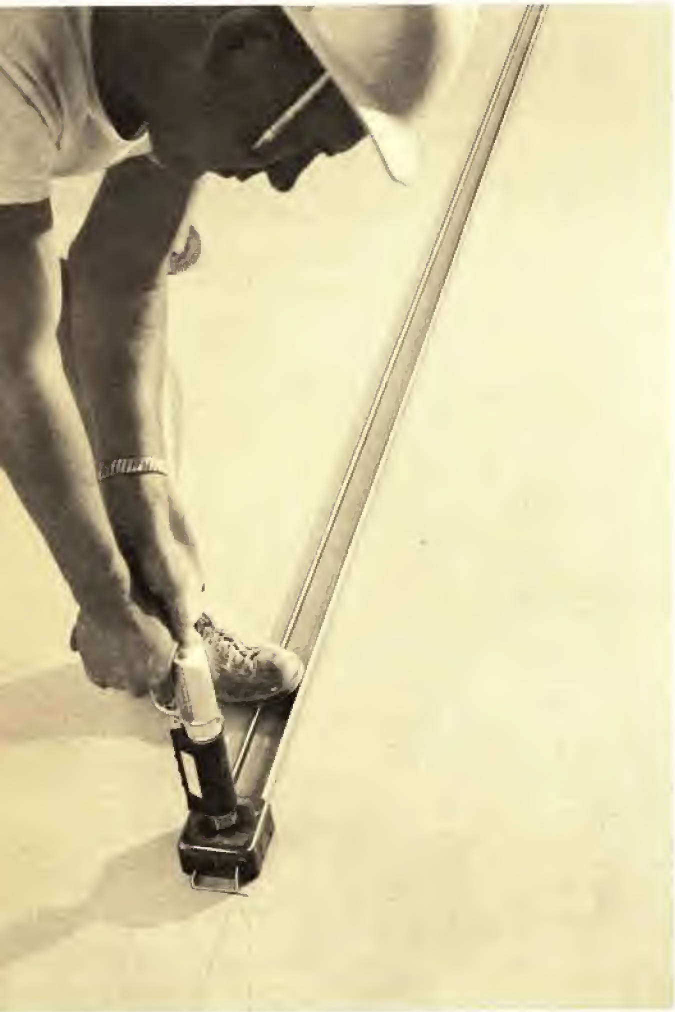
*T.M. Reg. U.S. Pat. Off.

Ease of Erection... Flexibility of Design

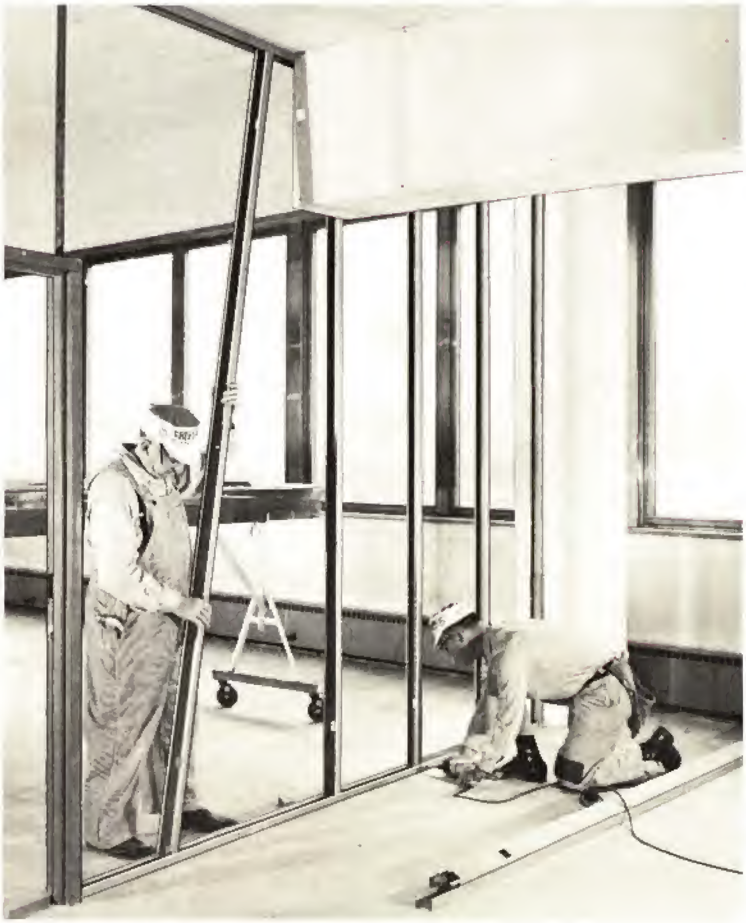
Highlight New USG Metal Stud Partitions



INSTALLATION



Metal floor and ceiling runners are installed.



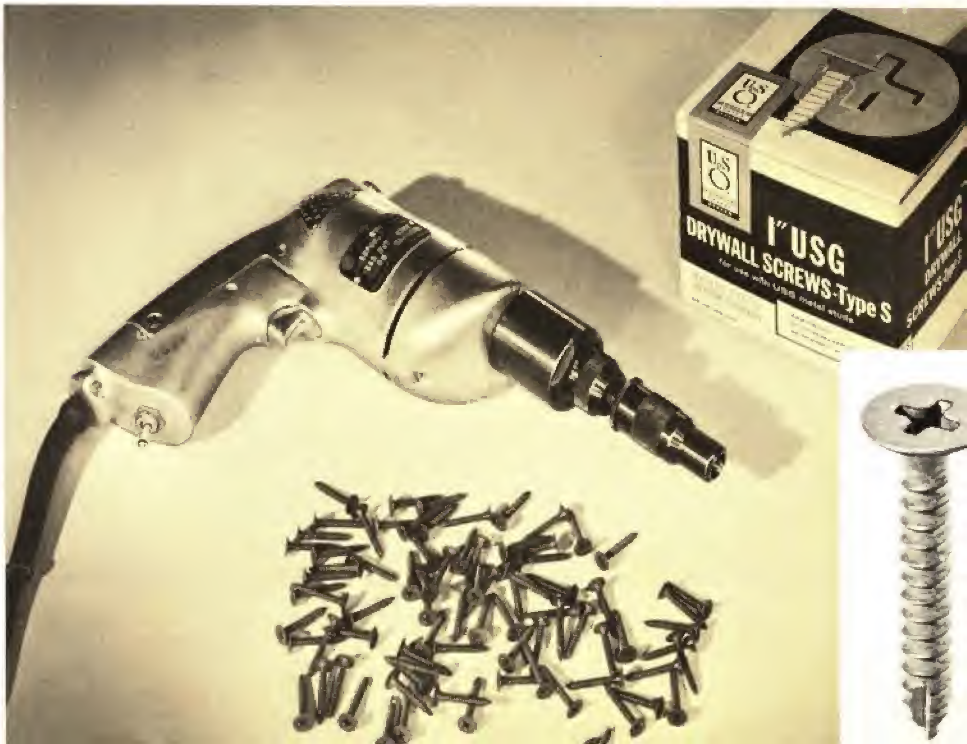
Metal studs are inserted into floor and ceiling runners, and twisted into position.

Self-nesting studs are permanently screw-spliced where necessary.

Vertically erected wallboard panel is inserted into door frame.

USG Drywall screws are driven using a specially designed power tool.

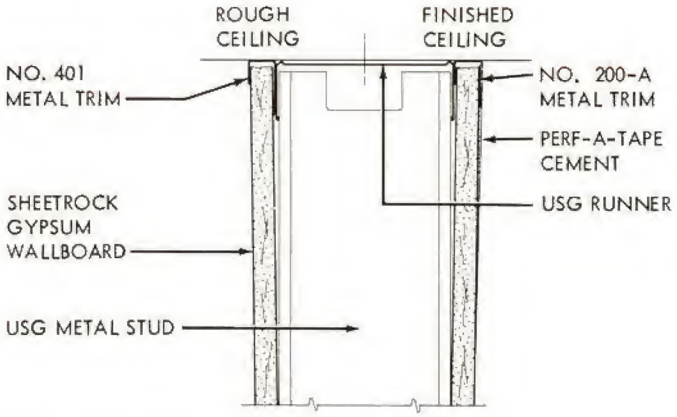
Necessary installation equipment: Special power screw-gun and 1″ USG Drywall Screws, Type S.

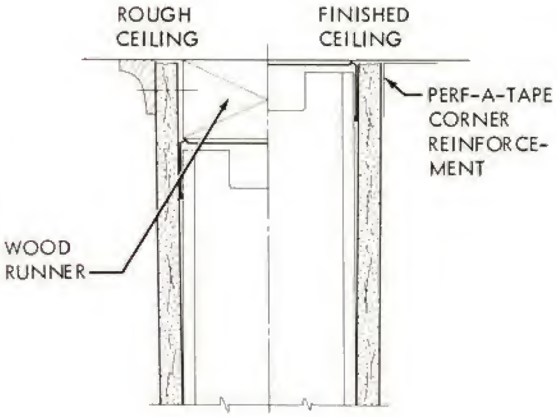


ARCHITECTURAL DETAILS· USG METAL STUD PARTITION

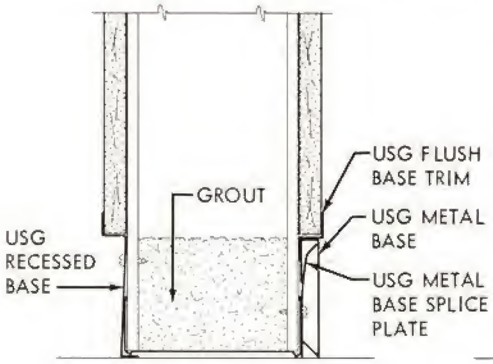
CEILING ATTACHMENTS

Scale: 3" = 1'-0"

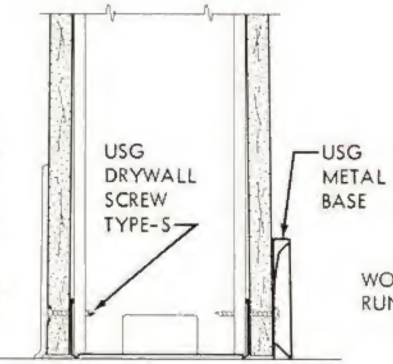




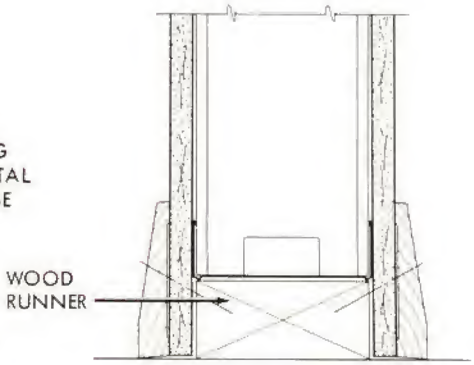
FLOOR ATTACHMENTS & BASES



METAL

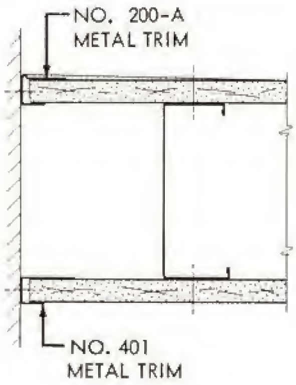


RUBBER METAL

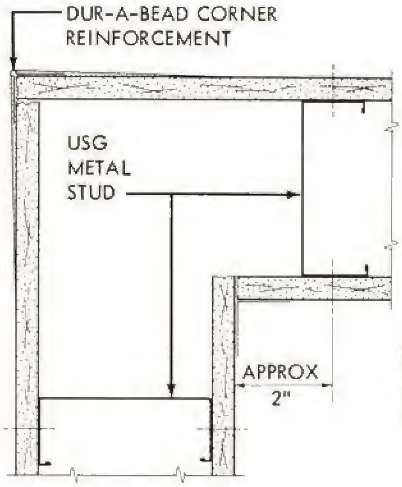


WOOD

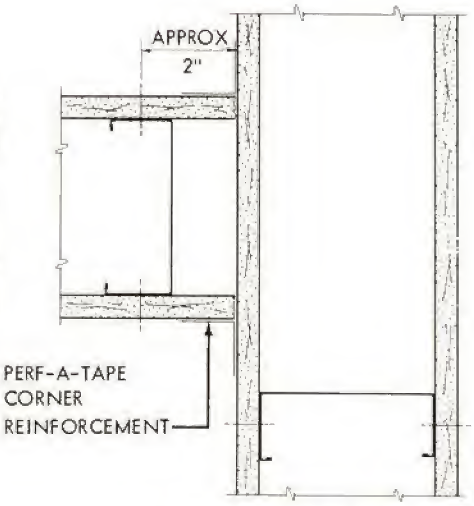
INTERSECTING WALLS



MASONRY WALL



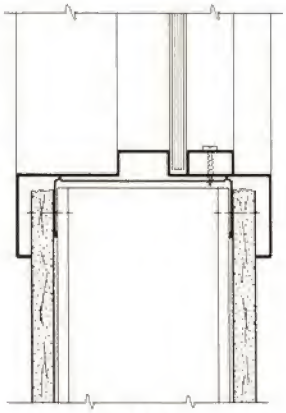
PARTITION CORNER



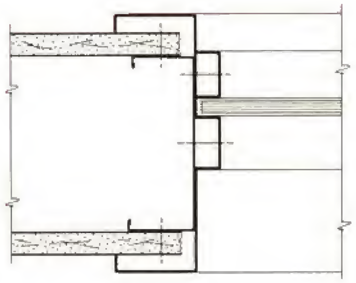
PARTITION "T"

METAL BORROW LIGHT FRAME

Scale: 3" =1'-0"

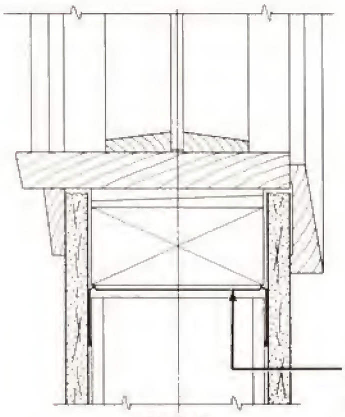


SILL



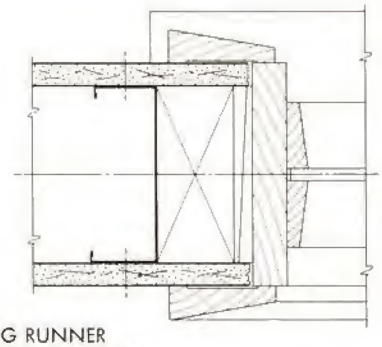
JAMB

WOOD BORROW LIGHT FRAME



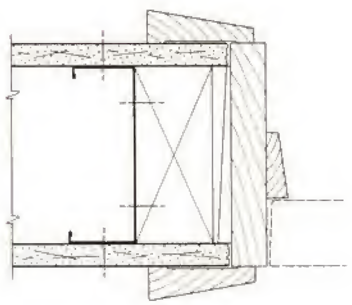
USG RUNNER
SCREW FASTENED
TO ROUGH FRAME

SILL



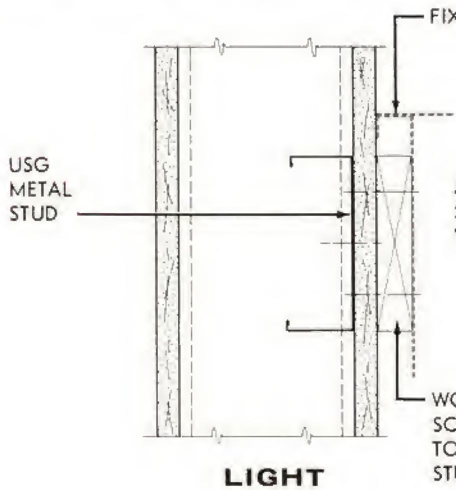
JAMB

WOOD DOOR FRAME

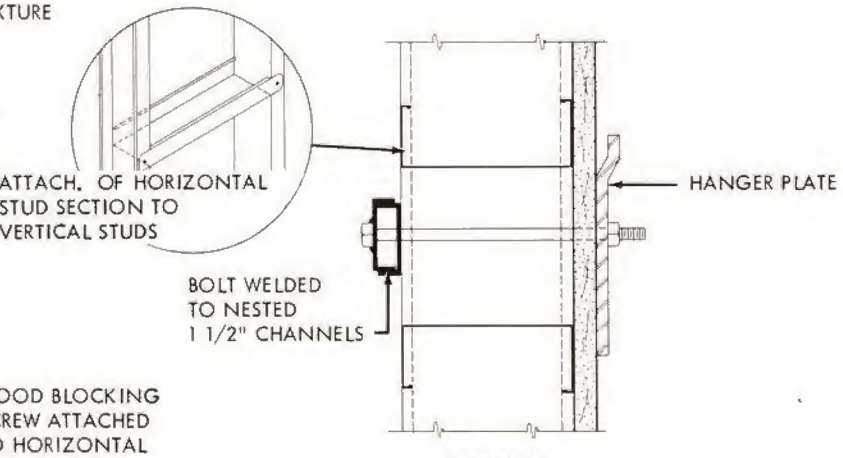


JAMB

FIXTURE ATTACHMENTS



LIGHT



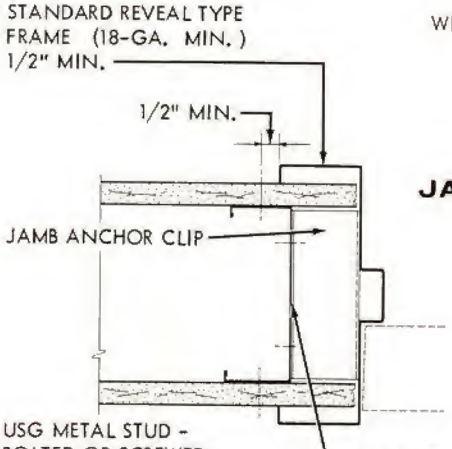
ATTACH. OF HORIZONTAL STUD SECTION TO VERTICAL STUDS
BOLT WELDED TO NESTED 1 1/2" CHANNELS
HANGER PLATE

HEAVY

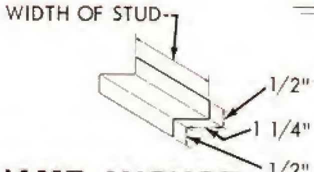
ARCHITECTURAL DETAILS· USG METAL STUD PARTITION

METAL DOOR FRAME

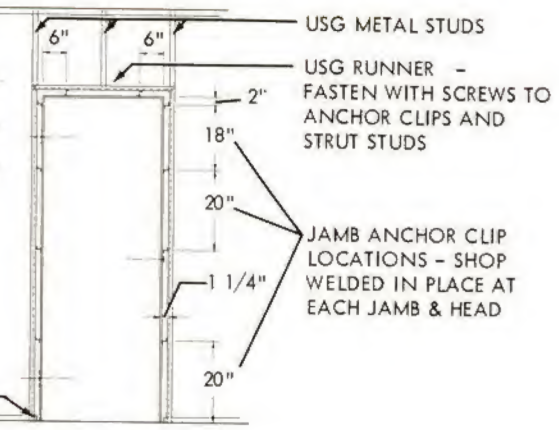
Scale: 3″=1′-0″


STANDARD REVEAL TYPE FRAME (18-GA. MIN.) 1/2" MIN.
1/2" MIN.
JAMB ANCHOR CLIP
USG METAL STUD - BOLTED OR SCREWED TO EACH JAMB ANCHOR CLIP

JAMB

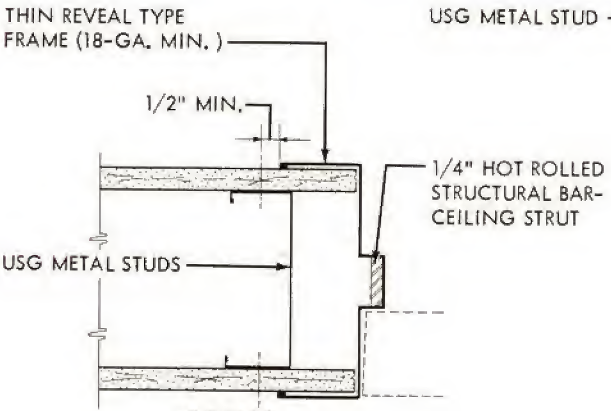


JAMB ANCHOR CLIP

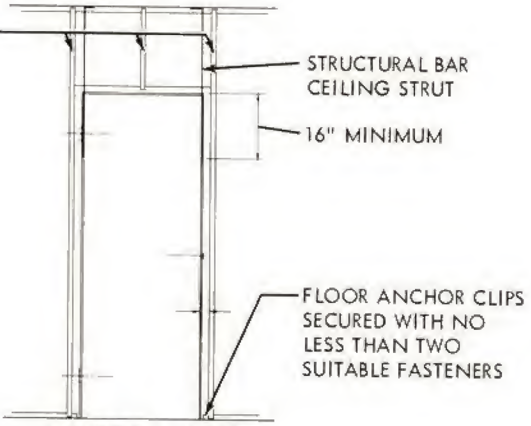

6"
6"
USG METAL STUDS
USG RUNNER - FASTEN WITH SCREWS TO ANCHOR CLIPS AND STRUT STUDS
2"
18"
20"
1 1/4"
20"
JAMB ANCHOR CLIP LOCATIONS - SHOP WELDED IN PLACE AT EACH JAMB & HEAD
FLOOR ANCHOR CLIPS SECURED WITH NO LESS THAN TWO SUITABLE FASTENERS

ELEVATION
CROSS SECTION THRU FRAME

METAL DOOR FRAME (Optional Anchorage Detail)

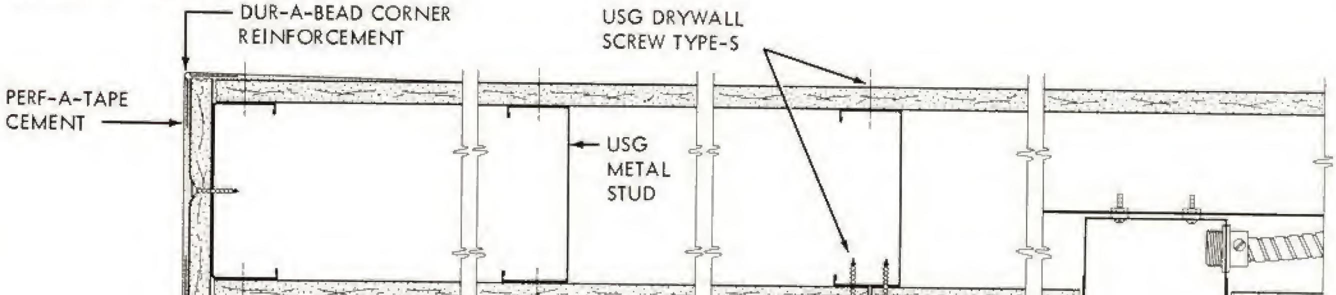

THIN REVEAL TYPE FRAME (18-GA. MIN.)
1/2" MIN.
1/4" HOT ROLLED STRUCTURAL BAR-CEILING STRUT
USG METAL STUDS

JAMB


USG METAL STUD
STRUCTURAL BAR CEILING STRUT
16" MINIMUM
FLOOR ANCHOR CLIPS SECURED WITH NO LESS THAN TWO SUITABLE FASTENERS

ELEVATION
CROSS SECTION THRU FRAME

WALL PLAN SECTIONS



PARTITION TERMINAL **STUD** **WALLBOARD EDGE JOINT** **OUTLET BOX**

SPECIFICATIONS

SCOPE

Furnish all labor, materials and equipment to erect all interior non-load-bearing partitions with related metal components and accessories, as required, and surface with gypsum wallboard in accordance with the specifications and drawings.

GENERAL CONDITIONS

In cold weather the building shall be heated during the application of the gypsum wallboard and joint treatment to maintain a uniform temperature in the range of 45° F. to 70° F., and ventilation shall be provided to eliminate excessive moisture.

All materials as specified shall be delivered on the job in original unopened containers or bundles, and stored in a place protected from damage and exposure to the elements.

Directions for the installation and application of all materials shall be in accordance with the latest printed directions of UNITED STATES GYPSUM.

MATERIALS

The products and materials hereinafter designated shall be as manufactured by UNITED STATES GYPSUM and shall be of the type, length and size as specified unless otherwise indicated.

A. **Studs**—DWS-158 (1⅝"), -212 (2½"), -358 (3⅝"), USG Metal Stud.

B. **Metal Floor and Ceiling Runners**—DWR-158 (1⅝"), -212 (2½"), -358 (3⅝"), USG Runner.

C. **Gypsum Board**—(⅜") (½") (⅝") Tapered Edge Sheetrock (Regular) (Firecode) 48" wide and in lengths as long as practical to minimize the number of joints and/or (⅜") (½") (⅝") Baxbord* (Regular) (Firecode) Gypsum Backing Board.

D. **Corner Bead**—(#101) Dur-A-Bead*, (#100) Perf-A-Bead*, Corner Reinforcement

E. **Metal Trim**—(#200-A), (#400), (#401) Metal Trim.

F. **Metal Base and Accessories**—Recessed Base, USG Metal Base, Metal Base Splice Plate, Flush Base Trim.

G. **Joint Treatment**—Perf-A-Tape Joint System.

H. **Laminating Adhesive**—Perf-A-Tape Cement (embedding type) or All Purpose Ready Mixed Perf-A-Tape Cement.

ERECTION

Runners shall be aligned accurately at floor and ceiling and securely anchored with suitable fasteners spaced not more than 24" on centers.

Studs shall be positioned vertically in the runners, spaced no greater than (16") (24") on centers. Anchor all studs located adjacent to door and window frames, partition intersections, and corners to runner flanges by positive screw engagement through each stud flange and runner flange. When necessary, studs shall be securely spliced with a minimum 8" nested lap in which 1 screw stud flange is required.

Studs shall be located no more than 2" from all door frame jambs, abutting partitions, partition corners and other construction. Studs shall be securely anchored to the jamb and head anchor clips of each door or borrow light frame by bolt or screw attachment (not required for frames with structural bar struts). Over metal door flange bend at each end, shall be placed horizontally and securely screw-attached to the adjacent vertical studs. A cut-to-length stud shall be positioned at the location of vertical joints over the door frame header extending to the ceiling runner.

(Provisions for heavy fixture anchorage shall be as detailed in the drawings.)

Gypsum wallboard shall be applied with long dimension (parallel) (at right angles) to framing members, and all abutting ends and edges shall occur over stud flanges. Wallboard of the maximum practical length shall be used to minimize end joints (where back-blocking used, float end joints between framing members). All end joints shall be neatly fitted and staggered. Joints on opposite sides of the partition shall be so arranged as to occur on different studs.

For *vertical* wallboard application and where fire rating required, screw fasteners shall be spaced a maximum of 12" on centers in the field of the board and 8" on centers *staggered* along the vertical abutting edges. For horizontal wallboard application, screw fasteners shall be spaced a maximum of 12" on center in the field of the board and 12" on center along the abutting end joints. Screws shall be power-driven with an electric screw driver and screw heads shall provide a slight depression below the surface of the wallboard. Screws shall not be driven closer than ⅜" from edges and ends of the board.

All joints, screw head and other depressions in the surface of the wallboard shall be treated in accordance with the recommended manner with Perf-A-Tape Joint System.

All internal and external angles formed by the intersection of either wallboard surfaces or other surfaces shall be treated with metal trim and/or Perf-A-Tape Joint System in accordance with the drawing details.

All vertical or horizontal external corners shall have Perf-A-Bead or Dur-A-Bead Corner Reinforcement applied in accordance with manufacturers directions.

RELATED INCLUSIONS

Door and Window Frames—Under the appropriate section of the specification indicate that metal door and borrow light frames shall be formed from not less than 18-gauge steel, shop primed. Anchor insert clips, minimum, 18-gauge steel, shall be shop welded in each jamb and head (sill) in accordance with details on page 10. Door frames shall be securely anchored to the floor by two power activated anchors, or equivalent attachment, through a 14-gauge steel clip at each jamb that is shop welded to trim flanges.

Door frame struts, when required, shall be 1" x ¼" hot rolled steel bar stock and shall be supplied as an integral part of the door frame.

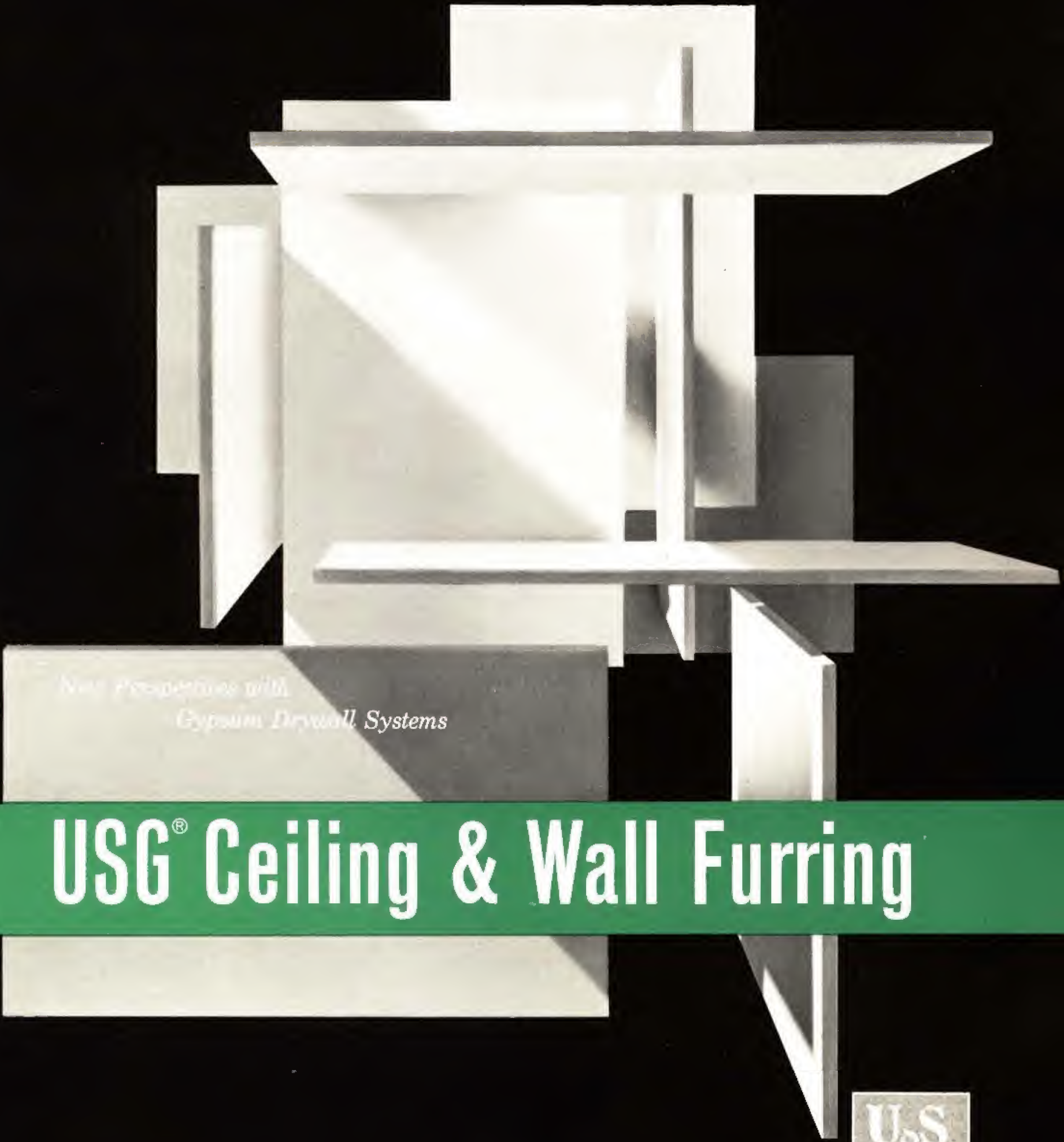
*T.M. Reg. U.S. Pat. Off.

USG Metal Stud
Gypsum Drywall Partitions

UNITED STATES GYPSUM

the greatest name in building

WB-385 USG 5-60 Printed in U.S.

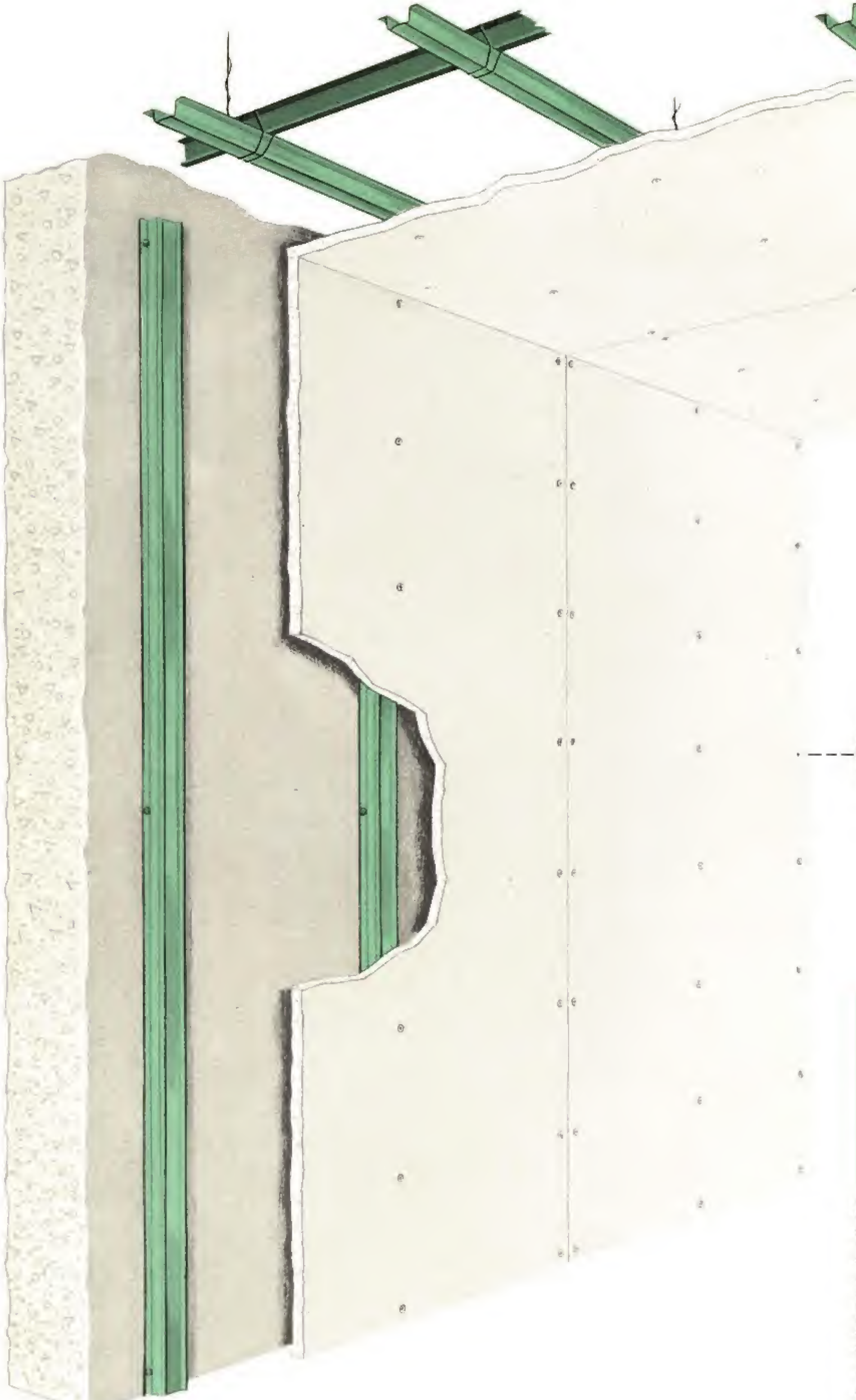


New Perspectives with
Gypsum Drywall Systems

USG® Ceiling & Wall Furring

UNITED STATES GYPSUM

the greatest name in building



NEW USG DRYWALL SCREW . . . for mechanical attachment of gypsum wallboard! Here, at last, is a mechanical attachment that does every job better. Superior holding power virtually eliminates loose attachment of gypsum board—anchors it for a lifetime! It is self-drilling, self-dimpling—goes in fast, minimizes core fracturing. Special screw-head design protects face paper—permits more effective "spotting." Won't "pop!" When used with recommended power tool, provides drywall application to steel, faster and better than ever before.

USG CEILING AND WALL FURRING GYPSUM DRYWALL SYSTEMS

CEILING SYSTEM

- *New advanced attachment method*
- *1½-hour fire rating*
- *Simplified components for greater economy*

DESCRIPTION

The USG Drywall Ceiling System is an incombustible construction which employs the attachment of either gypsum wallboard or backing board to a lightweight furring member with power-driven screws of unique design. A new channel, especially designed to facilitate screw fastening, or the USG Metal Stud, may be used as a ceiling furring member. The system involves only simple attachment of the furring members to a number of standard support members, or to new or existing surfaces.

Component Products and Accessories

FURRING CHANNEL

The channel is roll-formed from 25-gauge electro-galvanized steel, and is available in one standard size. It offers the following design features:

1. 2¾" *width*, overall, with ½" wing flanges provides firm attachment to all support members and surfaces and minimizes distortion, twisting or rocking.
2. Section design permits *easy splicing* (no splicing plates required) and easy nesting for storage and shipment.
3. 1⅜" *web* provides ample width to accommodate two rows of screws for *abutting* gypsum board edges and ends.

METAL STUD

The metal channel stud is roll-formed from 25-gauge electro-galvanized steel. It is available in widths of 1⅝", 2½" and 3⅝", and in lengths to meet normal job requirements.

FASTENER

The fastener is a one-inch, #6 sheet metal type, Phillips head screw fastener with a self-drilling point, self-tapping thread, and a rust-inhibitive coating. When driven with the recommended power equipment, this fastener provides firm, tight attachment of gypsum board. It also produces an optimum surface depression for proper screw head "spotting," while minimizing incidence of face paper cutting and core fracturing.

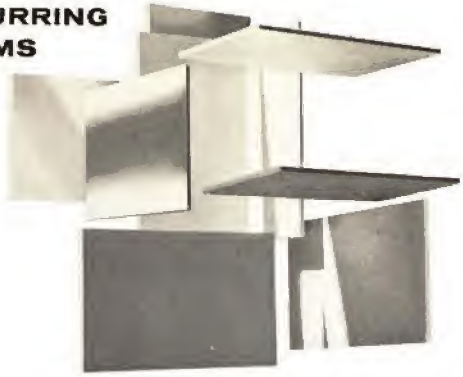
GYPSUM BOARD

Single layer gypsum wallboard or backing board in thicknesses of ⅜", ½" or ⅝" is screw-fastened to either the metal furring channel or stud used as a furring member.

ACCESSORIES

Various metal edge trims are available to conceal gypsum board edges at ceiling angles. Standard joint treatment products are used to treat ceiling angles where required, and to conceal joints and screw head dimples.

USG CEILING AND WALL FURRING GYPSUM DRYWALL SYSTEMS



CEILING SYSTEM

Function and Utility

FIRE RESISTANCE—The ceiling system employing the USG Drywall Furring Channel or the USG Metal Stud will consist entirely of incombustible framing and facing materials. In accordance with ASTM fire testing procedures, a 1½-hour fire rating was awarded the following construction:

1½-Hour Fire Rating—two-inch sand-gravel concrete slab on metal lath; steel bar joists; ceiling of ⅝″ SHEETROCK* FIRECODE* (UL listed) gypsum wallboard, screw-fastened to USG Drywall Furring Channels spaced 24″ o.c. and wire-tied direct to bar joists at 48″ intervals; wallboard joints and screw heads treated with reinforcing tape and joint cement.

ADAPTABILITY—The system may be used in virtually all types of new construction, and is readily adaptable to the modernization of existing buildings.

VERSATILITY—USG Drywall Ceiling Systems may be installed over a wide variety of support members and base surfaces. The USG Metal Studs will meet long span requirements resulting from the location of large ducts and massive pipes in the ceiling. All gypsum board ceiling furring systems provide a firm base for the adhesive application of acoustical tile.

STRENGTH—Furring members are specially designed to provide maximum rigidity and spacing of components.

ECONOMY—As a result of fewer components and simplified installation procedures, material cost is reduced while ease and speed of erection are increased.

LIMITATIONS

1. Gypsum board ceilings should not be used where they would normally be exposed to excessive moisture or continued wetting.
2. See technical data for fire-rated floor and ceiling assembly.
3. See following schedules for components and screw spacing.

*T. M. Reg. U.S. Pat. Off.

TECHNICAL DATA

Furring Member	For Attachment to:						
	1½″ Channel	Bar Joists	Concrete Joists	Wood Joists	Wood Beams	Concrete Slab	Masonry
DWC Furring Channel	X	X	X	X	X	X	X
USG Metal Stud All Sizes	X	X					

ATTACHMENT SCHEDULE

Type Furring Member		CEILING SYSTEMS-COMPONENT SPACING				
		Furring Member Center to Center Spacing			Main Support Member Center to Center Spacing	Hangers Center to Center
		For Wallboard Thickness of:				
		⅜″	½″	⅝″		
DWC Furring Channel		16″	24″	24″	4′-0″	4′-0″
USG Metal Stud	1⅝″	16″	24″	24″	5′-0″	4′-0″
	2½″	16″	24″	24″	6′-0″	
	3⅝″	16″	24″	24″	8′-0″	

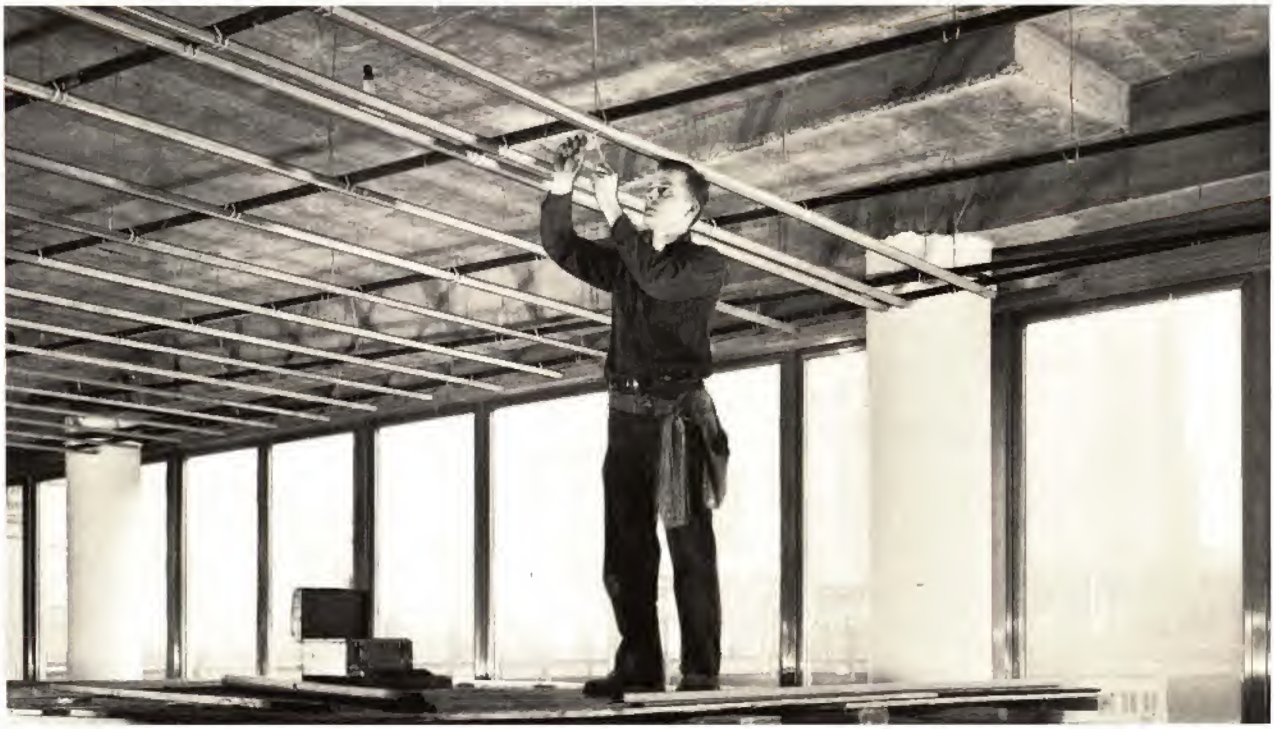
USG DRYWALL CEILING SYSTEMS—COMPONENT SPACING

1″ USG DRYWALL SCREW SPACING			
GYPSUM BOARD PRODUCT		Screw Spacing Along Furring Member	
		Field	Abutting Edges or Ends
*⅝″ Sheetrock Firecode	Board Applied at Right Angles to Furring Member	12″ C to C	8″ C to C Staggered
⅜″, ½″ & ⅝″ Regular or Insulating SHEETROCK Gypsum Wallboard, and BAXBORD Gypsum Backing Board	Board Applied at Right Angles to Furring Member	12″ C to C	12″ C to C
	Board Applied Parallel to Furring Member	12″ C to C	12″ C to C

*Fire rate floor and ceiling construction

1″ USG DRYWALL SCREW SPACING

CEILING INSTALLATION



Lightweight USG Drywall Furring channel is fastened to 1½″ cold rolled channel.

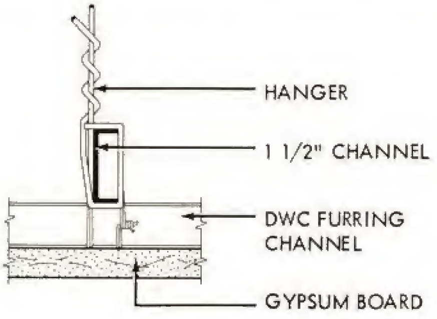
⅝″ SHEETROCK* FIRECODE* Wallboard is placed at right angles to the furring channel, ready for power-driven screw fastening.

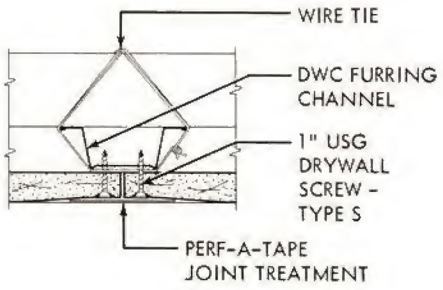
Simple, positive, power-driven screw attachment assures a strong, smooth, blemish-free ceiling during years of service.

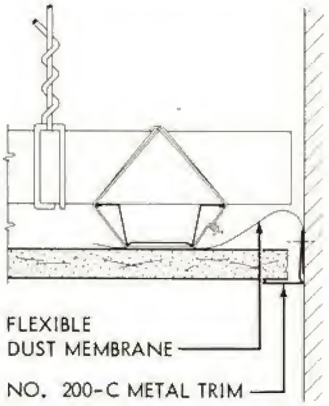
ARCHITECTURAL DETAILS • CEILINGS

SUSPENDED CEILING–DWC FURRING CHANNEL

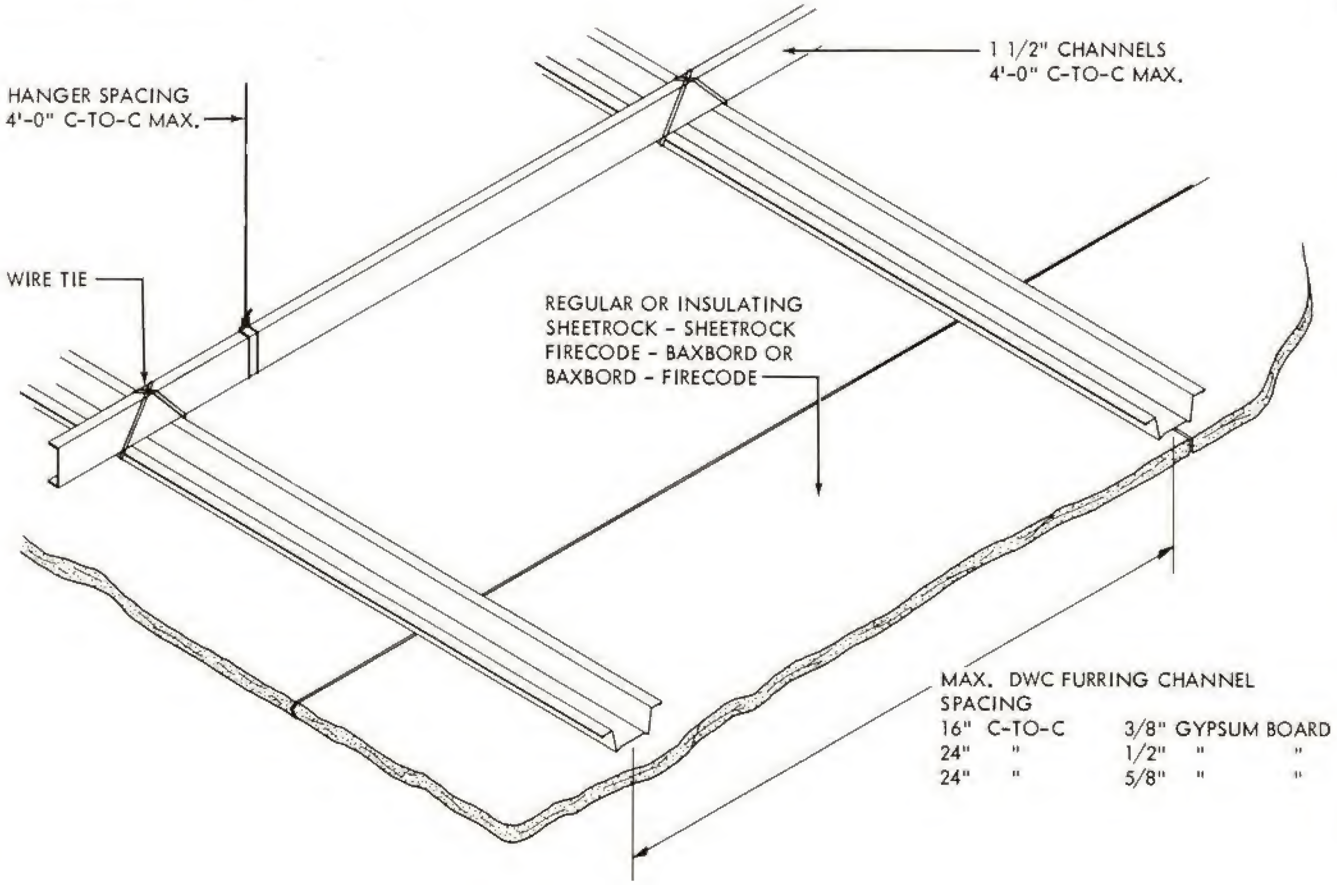
Scale: 3″ = 1′ – 0″







ISOMETRIC–No Scale


1 1/2" CHANNELS 4'-0" C-TO-C MAX.
HANGER SPACING 4'-0" C-TO-C MAX.
WIRE TIE
REGULAR OR INSULATING SHEETROCK - SHEETROCK FIRECODE - BAXBORD OR BAXBORD - FIRECODE

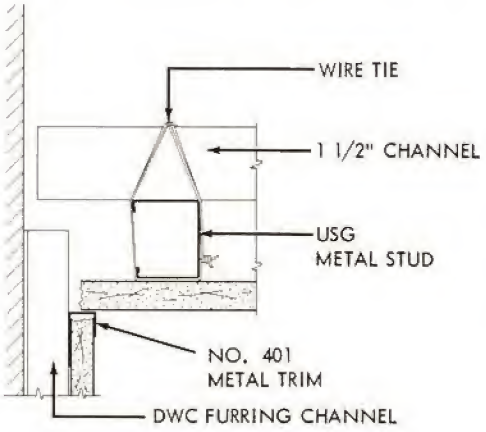
MAX. DWC FURRING CHANNEL SPACING

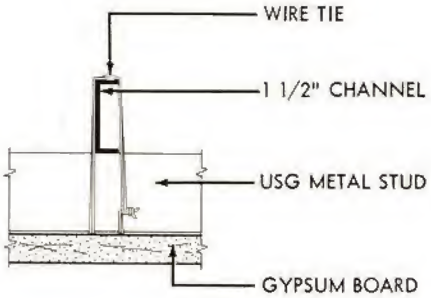
16" C-TO-C	3/8" GYPSUM BOARD
24" "	1/2" " "
24" "	5/8" " "

CEILING DETAILS

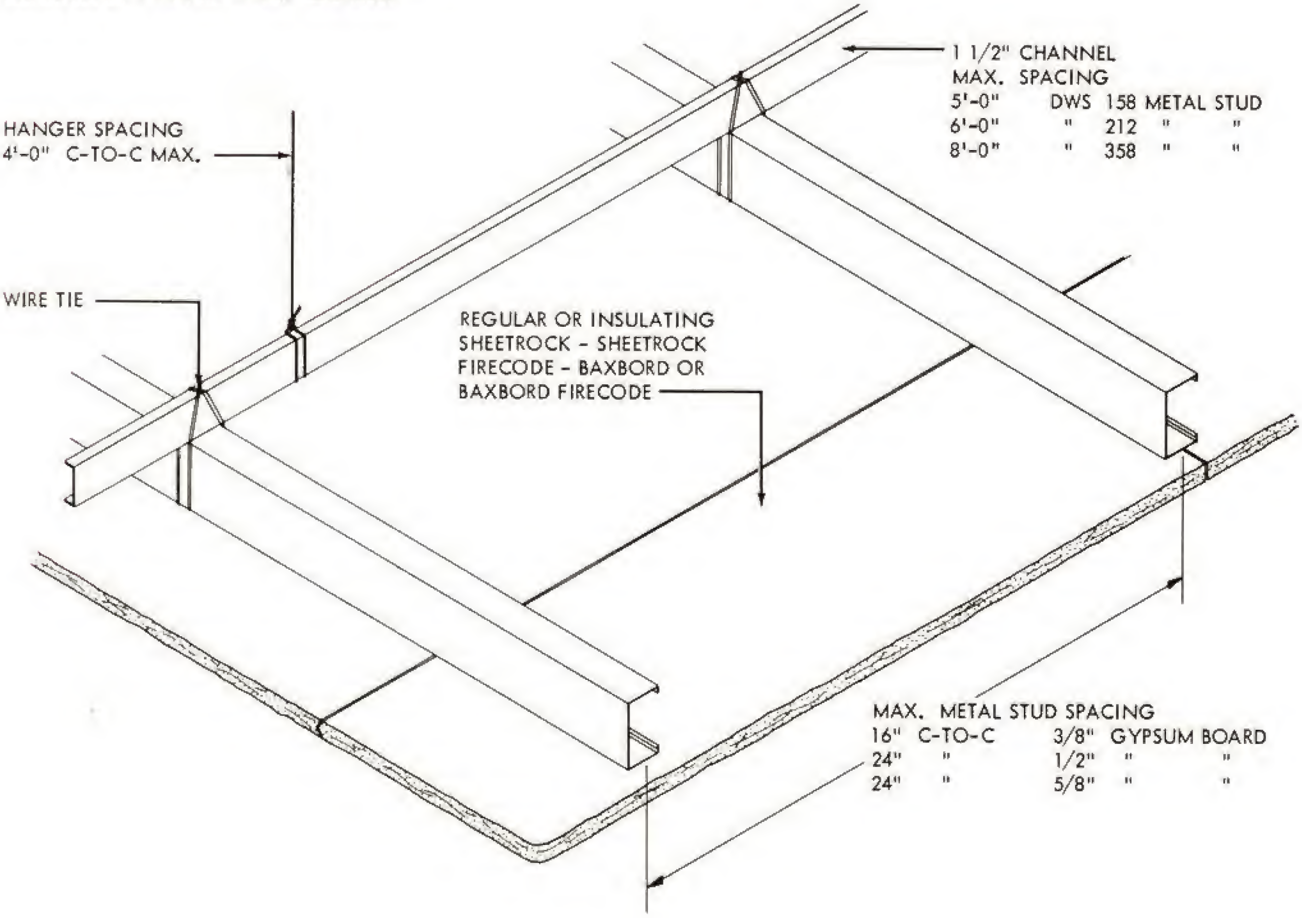
SUSPENDED CEILING–USG METAL STUD

Scale: 3" = 1'-0"





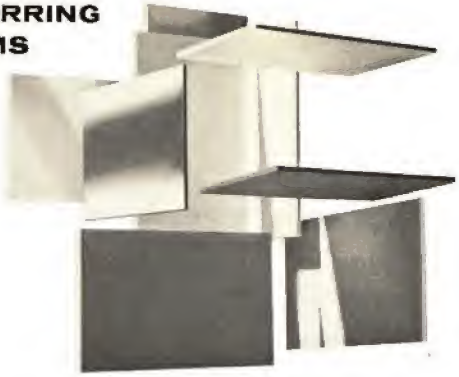
ISOMETRIC–No Scale


HANGER SPACING 4'-0" C-TO-C MAX.
WIRE TIE
REGULAR OR INSULATING SHEETROCK - SHEETROCK FIRECODE - BAXBORD OR BAXBORD FIRECODE

1 1/2" CHANNEL

MAX. SPACING			
5'-0"	DWS	158	METAL STUD
6'-0"	"	212	" "
8'-0"	"	358	" "

MAX. METAL STUD SPACING			
16"	C-TO-C	3/8"	GYPSUM BOARD
24"	"	1/2"	" "
24"	"	5/8"	" "



WALL FURRING SYSTEM

- *New advanced attachment method*
- *Single- or double-layer construction*
- *Installed over most any type masonry*
- *Available with built-in vapor barrier*

DESCRIPTION

The USG Drywall Wall Furring Systems consist of the same basic components and materials as USG Drywall Ceiling Systems. Various gypsum wallboard or backing board products are fastened to metal furring channels with power-driven screws.

The USG Drywall Furring Channel may be attached direct to masonry or concrete surfaces, or the USG Metal Stud may be installed as a free-standing furred wall.

Function and Utility

ADAPTABILITY

USG Drywall Wall Furring System may be used to advantage in all types of new construction, and in the modernization of existing buildings.

VERSATILITY

The systems may be installed over virtually any type of masonry—brick, tile, PYROBAR* Gypsum Tile, monolithic concrete.

VAPOR BARRIER

When used with foil back SHEETROCK* Wallboard, a moisture vapor barrier is obtained.

*T. M. Reg. U.S. Pat. Off.

ECONOMY

USG Drywall Wall Furring Systems offer the same savings in time and materials as the ceiling systems, as a result of simplified procedures and fewer components.

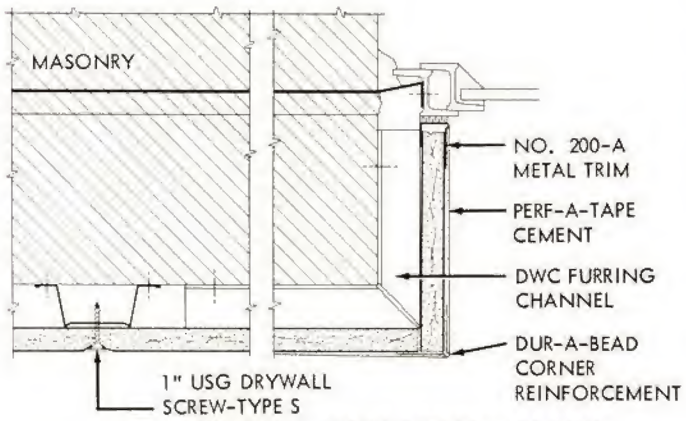
LIMITATIONS

For a free-standing furred wall using DWS-158 (1⅝") metal studs, the limiting height is 9′.

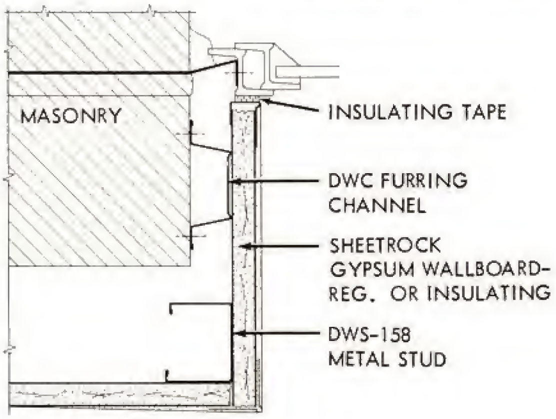
ARCHITECTURAL DETAILS • WALL FURRING

FURRED WALL PLAN SECTIONS

Scale: 3" = 1'-0"



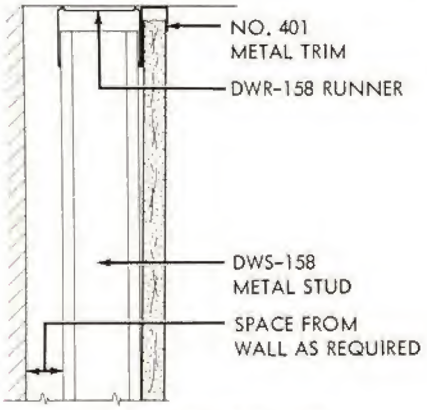
METAL WINDOW–JAMB



METAL WINDOW–JAMB

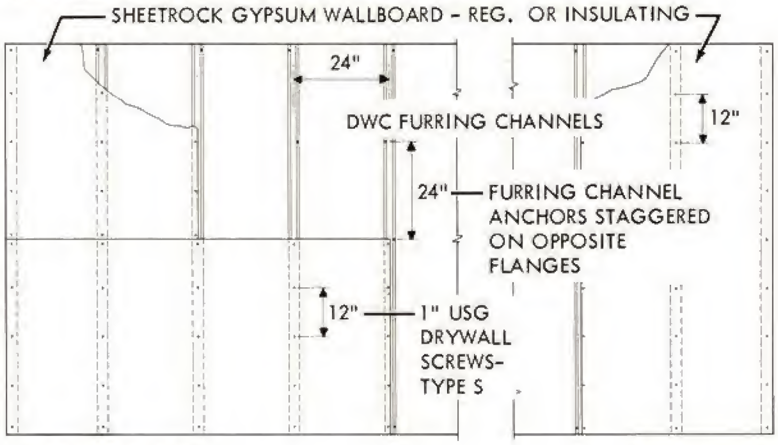
CEILING ATTACHMENT

ROUGH OR FINISHED CEILING



FREE STANDING METAL STUD WALL

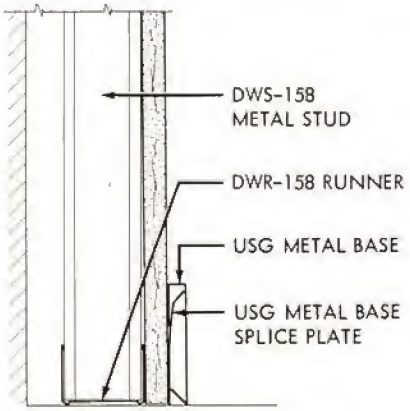
WALL ELEVATION–Scale: ¼" = 1'-0"


SHEETROCK GYPSUM WALLBOARD - REG. OR INSULATING
24"
DWC FURRING CHANNELS
12"
24"
FURRING CHANNEL ANCHORS STAGGERED ON OPPOSITE FLANGES
12"
1" USG DRYWALL SCREWS-TYPE S

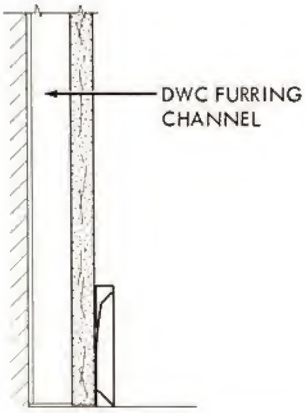
HORIZONTAL APPLICATION

VERTICAL APPLICATION

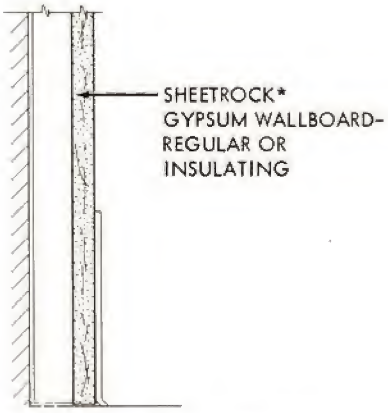
FLOOR ATTACHMENT & BASES



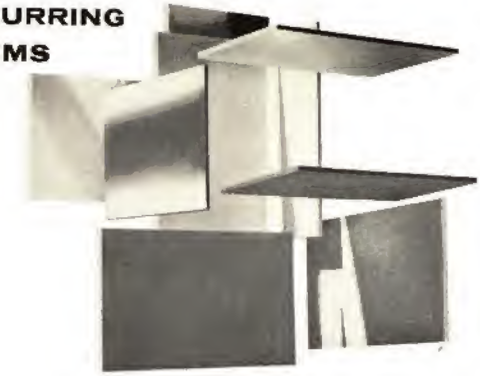
FREE STANDING METAL STUD WALL



ATTACHED FURRING METAL BASE



ATTACHED FURRING RUBBER BASE



SPECIFICATIONS

SCOPE

Furnish all labor, materials and equipment required to erect all *furred* gypsum board ceilings and walls complete with related metal components and necessary accessories in accordance with the drawings and as specified herein.

GENERAL CONDITIONS

In cold weather the building shall be heated during the application of gypsum board and joint treatment, to maintain a uniform temperature in the range of 45°F to 70°F., and ventilation shall be provided to eliminate excessive moisture.

All materials as specified shall be delivered to the job in original unopened containers, and stored in a place protected from damage and exposure to the elements.

Directions for the installation and application of all materials shall be in accordance with the latest printed directions of UNITED STATES GYPSUM.

MATERIALS

The materials hereinafter designated shall be products of UNITED STATES GYPSUM and shall be of the type, length and sizes as specified, unless otherwise indicated.

A. Furring Channels

DWC Furring Channel
and/or
DWS-158 (1⅝"), —212 (2½"), —358 (3⅝") USG Metal Stud

B. Carrying Channels

1½" Cold Rolled Channels

C. Hangers

9-gauge Galvanized Hanger Wire, or as required

D. Tie Wire

(16 ga.) (18 ga.) Galvanized Annealed Wire

E. Gypsum Board

(⅜") (½") (⅝") Tapered Edge SHEETROCK*, (Regular) (Insulating—Foil Back) (FIRECODE*), 48" wide and in lengths as long as practical to minimize the number of end joints,
and/or
(⅜") (½") (⅝") BAXBORD* Gypsum Backing Board, (Insulating—Foil Back) (FIRECODE).

F. Fasteners

1" USG Drywall Screw—Type S

G. Metal Floor and Ceiling Runners

DWR—158 (1⅝") USG Runner

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*T. M. Reg. U.S. Pat. Off.

H. Metal Trim

(#200A) Metal Trim
(#400) (#401) Metal Trim

I. Metal Base and Accessories

Recessed Base
Flush Base Trim
Metal Base
Metal Base Splice Plate

J. Joint Treatment

PERF-A-TAPE* Joint System

CEILING INSTALLATION

Hangers for suspended ceilings shall be securely anchored to the structural frame or imbedded in concrete slabs. Spacing of hangers shall not exceed 4′-0″ along the 1½″ cold-rolled carrying channels. The spacing of 1½″ channels shall be determined by the ceiling furring channel used, but shall not exceed:

4′-0″ for DWC Furring Channel
5′-0″ for DWS-158 USG Metal Stud
6′-0″ for DWS-212 USG Metal Stud
8′-0″ for DWS-358 USG Metal Stud

(DWC Furring Channels) (USG Metal Studs) shall be attached at no greater than 24″ center to center, and shall be attached in a direction at right angles to 1½″ carrying channels or main support members and securely wire-tied or anchored by other suitable fastening. End splices shall be provided by nesting channels no less than 8″ and securely wire-tying.

Gypsum board shall be applied with the long dimension at right angles to the furring channels in all instances where practical and where fire rating is required. End joints shall be centered over furring channels (where back-blocking used, float end joints between furring channels), neatly fitted, and staggered. Gypsum board of maximum practical length shall be used to minimize end joints. Gypsum board shall be properly supported around all cut-outs and openings in ceiling.

Screw fasteners shall be spaced a maximum of 12″ o.c. in the field of the board, and 12″ o.c. along abutting ends or edges (8″ o.c. staggered along abutting ends where fire rating required). All screws shall be power-driven with an electric screw-driver and screw heads shall provide a slight depression below the surface of the board. Screws shall not be driven closer than ⅜″ from edges and ends of the board.

All joints, screw head depressions or any defects incurred during the installation of the gypsum board shall be treated in accordance with the prescribed manner with PERF-A-TAPE Joint System. (Joints and screw heads are left exposed if gypsum board is to serve as a base for adhesive application of acoustical tile, and fire rating not required.)

Metal edge trim shall be installed at ceiling angles and around ceiling cut-outs and openings in accordance with the plans, or as otherwise required.

WALL AND CEILING FURRING INSTALLATION

DWC Furring Channels shall be attached to masonry or concrete surfaces, either vertically or horizontally, at maximum 24″ centers with hammer-set or powder-activated stud fasteners, or concrete stub nails, spaced 24″ center to center through alternate wing flanges (staggered) of the furring channel.

Regular or insulating (foil back) gypsum board shall be applied with the long dimension at right angles to furring channel. All abutting end or edge joints shall occur over the web surface of furring channel (where back-blocking used, float end joints between furring channels), and shall be fitted neatly and accurately. End joints shall be staggered.

Screw fasteners shall be spaced 12″ o.c. along each furring channel, and placed no closer than ⅜″ from ends and edges of board. Screws shall be power-driven and screw heads shall provide a slight depression below the surface of the board.

Treat all joints and screw head depressions with PERF-A-TAPE Joint System in accordance with manufacturer's directions.

FREE STANDING FURRED WALL INSTALLATION

(See Specifications—USG Metal Stud Gypsum Drywall Partition. This construction requires the application of gypsum board to only one side of the DWS-158 Metal Stud, which is located with respect to the masonry or concrete wall surface as conditions require or permit.)

USG CEILING AND WALL FURRING GYPSUM DRYWALL SYSTEMS

UNITED STATES GYPSUM

the greatest name in building

WB-386 USG 5/60 Printed

A.I.A. File 23-L 23-M

TECHNICAL INFORMATION

SHEETROCK*

GYPSUM WALLBOARD

UNITED STATES GYPSUM

1960

*T.M. Reg. U.S. Pat. Off.

UNITED STATES GYPSUM

A.I.A. File 23-L 23-M

SHEETROCK*
GYPSUM WALLBOARD

DESCRIPTION

SHEETROCK is a mill fabricated gypsum wallboard composed essentially of a fireproof gypsum core encased in a heavy manila-finished paper on the face side and a strong liner paper on the back side. The face paper is folded around the long edges to reinforce and protect the core, and the ends are square cut and smooth finished.

FUNCTION AND UTILITY

Without the addition of plaster, SHEETROCK wallboard furnishes to interior walls and ceilings a durable surface suitable for any type of decorative treatment, and permits repeated redecoration during the life of the building. The joints between adjacent boards may be reinforced and concealed with the PERF-A-TAPE* Joint System, or may be featured by leaving exposed or covering with a decorative moulding.

SHEETROCK wallboard provides the following features:

Dry Walls. Mill fabricated boards eliminate excessive moisture in construction.

Fireproof. The gypsum core will not support combustion or transmit temperatures greatly in excess of 212° F. until completely calcined,—a slow process. See technical data for Fire Resistance Ratings.

Crack Resistance. "Welded" together by the PERF-A-TAPE* Joint System, SHEETROCK wallboard forms walls and ceilings exceptionally resistant to cracks caused by frame movement, vibration, or minor settlement.

Speed. Mill fabricated boards are easily cut and quickly applied.

Quick Decoration. Essentially a "dry" material, SHEETROCK wallboard permits painting or other decoration, and the installation of metal or wood trim, almost immediately.

Non-Warping. Expansion or contraction under normal atmospheric changes is negligible and does not cause harmful warping or buckling.

GENERAL LIMITATIONS OF USE

1. Not recommended where exposure to moisture is extreme or continuous.

2. Must be adequately protected against wetting when used as a base for tile.

3. Maximum Spacing of Framing Members: ½" and ⅝" SHEETROCK wallboard is designed for use on framing centers from 16" to 24"; ⅜" and ¼" SHEETROCK, on centers up to 16" SHEETROCK wallboard used on 24" centers on ceilings must be applied across framing members. When so applied, the use of headers behind joints is not required. On walls, where SHEETROCK is applied across framing on 24" centers and joints reinforced, headers are not required.

4. Application of SHEETROCK over ¾" wood furring applied across framing is not recommended since the relative flexibility of the furring under impact of the hammer tends to loosen nails already driven.

STANDARD SPECIFICATIONS

SHEETROCK wallboard complies with the following Standard Specifications for Gypsum Wallboard: Federal Specification SS-W-51a. American Society for Testing Materials Specification ASTM C36.

FIRE RESISTANCE RATINGS FOR SHEETROCK WALLBOARD

(Tests conducted in recognized laboratories according to ASTM Specifications.) (Copies available on Request)

TYPE CONSTRUCTION	WALLBOARD		RATING	REFERENCE
PARTITIONS—WOOD FRAMING Wood studs faced both sides as indicated. Ratings apply on both Bearing and Non-Bearing partitions, except as shown.	⅜" SHEETROCK		25 Minutes	NBS—BMS 92
	½" SHEETROCK		40 Minutes	NBS—BMS 92
	½" SHEETROCK, (mineral wool batts nailed to studs.)		1 Hour	NBS—BMS 92
	½" SHEETROCK, (loose mineral wool fill.)	Non-Bearing	1 Hour	NBS—BMS 92
	½" SHEETROCK FIRECODE		45 Minutes	UL
	⅝" SHEETROCK FIRECODE		1 Hour	UL
	2 layers ⅜" SHEETROCK		1 Hour	Fire Test. Lab.
	2 layers ½" SHEETROCK	Non-Bearing	1½ Hours	NBS—FP2708
	2 layers ⅝" SHEETROCK FIRECODE		2 Hours	UL
PARTITIONS—STEEL FRAMING Nailable steel stud, steel floor and ceiling runner faced both sides as indicated. Joints treated.	⅝" SHEETROCK FIRECODE	Non-Bearing	1 Hour	Fire Test. Lab.
TRUSSTEEL* Studs, steel floor and ceiling runner faced both sides as indicated. Joints treated.	⅜" SHEETROCK over ⅜" BAXBORD* Backing Board (Non-Bearing)		45 Minutes	Fire Test. Lab.
	½" SHEETROCK FIRECODE over ⅜" BAXBORD (Non-Bearing)		1 Hour	Fire Test. Lab.
CEILINGS—WOOD FRAMING Wood joists faced with rough and finish floor, and on the under side as indicated.	½" SHEETROCK (Nailed to joists with 1¾", No. 12 ga. nails, having ½" heads.)		25 Minutes	NBS—BMS 92
	½" SHEETROCK FIRECODE		45 Minutes	UL
	⅝" SHEETROCK FIRECODE		1 Hour	UL
	2 layers ⅜" SHEETROCK		30 Minutes	NBS—BMS 92
	2 layers ½" SHEETROCK		1 Hour	NBS—FP 2926
CEILINGS—STEEL FRAMING Open web steel joist-concrete floor construction faced as indicated. Joints taped or untaped.	⅝" SHEETROCK FIRECODE		1 Hour	UL
	⅝" BAXBORD* FIRECODE		1 Hour	UL
	2 layers—BASE LAYER ⅝" BAXBORD FIRECODE 60 FACE LAYER ½" SHEETROCK FIRECODE 45		1½ Hours	UL
STEEL COLUMNS	4 layers ½" SHEETROCK		2½ Hours	NBS Test 315
	3 layers ½" SHEETROCK		1½ Hours	NBS Test 304
	2 layers ½" SHEETROCK		1 Hour	NBS Test 303

FIRE HAZARD CLASSIFICATION—*A rating of 10 to 15 is now applicable to* **SHEETROCK GYPSUM WALLBOARD.**

*Trademark Reg. U. S. Pat. Off.

"USG", "SHEETROCK", "PERF-A-TAPE", "BAXBORD", "FIRECODE", "PERF-A-BEAD", "DUR-A-BEAD", "PERF-A-TRIM", "TEXOLITE", "BRIDJOINT", "TRUSSTEEL", "TRUS-LOK", are trademarks owned and/or registered by United States Gypsum. "USG" identifies the particular gypsum board sheathing or laminating adhesive, "SHEETROCK" identifies the particular gypsum wallboard or adhesive, "BAXBORD" and "FIRECODE" identify the particular gypsum wallboards, "PERF-A-TAPE" identifies the particular joint sealing tape, "PERF-A-BEAD" and "DUR-A-BEAD" identify the particular corner bead, "PERF-A-TRIM" identifies the particular casing, "BRIDJOINT" and "TRUS-LOK" identify the particular clips, "TRUSSTEEL" identifies the particular stud, "TEXOLITE" identifies the particular interior paint manufactured only by United States Gypsum.

TECHNICAL DATA SHEETROCK WALLBOARD

THICKNESS	WEIGHT PER SQUARE FT. (1)	SIZE SHEETS	LOCATION	APPLICATION METHOD	MAXIMUM ALLOWABLE SPACING (2) C. TO C.	
					WOOD	STEEL
⅜" Taper Edge	1.5	4'x8' to 14'	Ceilings	Horizontal	16"	16"
⅜" Taper Edge	1.5	4'x8' to 14'	Sidewalls	Horizontal or Vertical	16"	16"
½" Taper Edge	2.0	4'x8' to 14'	Ceilings	Vertical Horizontal	16" 24"	16" 24"
½" Taper Edge	2.0	4'x8' to 14'	Sidewalls	Horizontal or Vertical	24"	24"
⅝" Taper Edge	2.6	4'x8' to 14'	Ceilings	Vertical Horizontal	16" 24"	16" 24"
⅝" Taper Edge	2.6	4'x8' to 14'	Sidewalls	Horizontal or Vertical	24"	24"

(1) Approximate.
(2) 16" O.C. maximum where fire rating required.

INSTALLATION SYSTEMS	SHEETROCK WALLBOARDS									BAXBORD					
	TAPERED EDGE				(A) INSULATING (FOILBACK)			WOOD GRAINED	PANEL	FIRECODE		BACKING BOARDS			FIRE-CODE
Thickness, inches	¼	⅜	½	⅝	⅜	½	⅝	⅜ only	⅜ only	½	⅝	⅜	½	⅝	⅝
Finish for interior walls, ceilings, partitions															
Single Layer—															
over existing walls	x	x						x	x						
over wood framing		x	x	x	x	x	x	x	x	x	x				
Double walls over wood framing—															
Base		x										x	x	x	
finish		x						x	x						
Ceilings for steel joist—concrete floor construction—															
Base for ceilings													x	x	x(C)
Finish for ceilings										x	x				
Single Layer over metal grillage		x	x	x	x	x	x			x	x				
Single Layer over nailable steel studs and/or channels		x	x	x	x	x	x			x	x				
Finish for non-bearing partitions															
Two layers over TRUSSTEEL studs—															
Base												x(B)			
Finish		x						x	x	x					
Insulation (foilback) and vapor barrier for ceilings and exterior walls															
Single layer over wood framing					x	x	x								
Acoustical ceiling base															
Single layer over metal grillage			x	x		x	x			x	x		x	x	x(C)
Ceramic or other tile wall base															
Single layer over wood framing		x	x	x						x	x				

SPECIFICATIONS (See pages 14–18)

(A) Made by laminating aluminum foil on back surface of BAXBORD or any SHEETROCK except Panel type.
(B) 2' wide—⅜" BAXBORD available on special order for SHEETROCK WALLBOARD TRUSSTEEL stud partition system.
(C) 2' wide, V edges (4' wide available on special order).

SHEETROCK
GYPSUM WALLBOARD

TAPERED EDGE SHEETROCK

The long edges are tapered on the face side to form a shallow channel for the joint reinforcement, providing smooth, continuous wall and ceiling surfaces. Tapered Edge is a marked improvement over, and has supplanted, recessed edge formation. Made in four thicknesses:

Five-Eighths Inch. ⅝″ Tapered Edge SHEETROCK is recommended for the finest single layer drywall construction. The greater thickness provides increased resistance to fire exposure and transmission of sound.

One-Half Inch. ½″ Tapered Edge SHEETROCK is recommended for single layer use in new residential construction, with all joints reinforced and concealed with the PERF-A-TAPE Joint System.

Three-Eighths Inch. Differs from ½″ Tapered Edge SHEETROCK wallboard only in thickness and weight; it is used principally in repair and remodel work.

Quarter-Inch. A lightweight, low cost, utility gypsum wallboard, easily applied over old wall and ceiling surfaces.

Thickness: ¼″, ⅜″, ½″, ⅝″
Width: 4′
Length: 8′, 9′, 10′, 12′ or 14′ (*Note: ¼″ 8′, 10′ only*)
Edges: Tapered
Finish: Ivory, paper, suitable for paint, wallpaper or other decoration.

SHEETROCK FIRECODE

⅝″ SHEETROCK FIRECODE and ½″ SHEETROCK FIRECODE are gypsum wallboards which combine all the advantages of regular SHEETROCK with increased resistance to fire exposure—the result of a specially formulated core containing special mineral materials.

By Underwriters' Laboratories tests, certain partition and floor and ceiling constructions with ⅝″ SHEETROCK FIRECODE and ½″ SHEETROCK FIRECODE facings afford 60 minute and 45 minute fire resistance ratings, respectively. These products are also used in 1½-hour floor and ceiling and 2-hour wall constructions.

Limitations of Use

1. Same as General Limitations, page 2.

2. In order to attain the 1 hour and the 45 minute fire resistance ratings, the construction of the partition and/or floor and ceiling assemblies must be in accordance with the respective Underwriters' Laboratories, Inc., panel designs. See Technical Data, for description of panel constructions.

3. Maximum Spacing of Framing Members: 16″ o.c. where fire rating required, otherwise 24″.

Thickness: ½″, ⅝″
Width: 4′
Length: 8′, 9′, 10′, 12′ or 14′
Edges: Tapered
Finish: Ivory, suitable for paint, wallpaper, or other decoration.

WOODGRAINED SHEETROCK

Special paper with a Ranch Pine, Cherrywood or Sablewood finish produced from photographic reproductions of natural wood panels is laminated to the face of regular SHEETROCK wallboard to produce a board having all the regular advantages, except reinforced joints, plus the economy of uniquely realistic appearing wood-grained predecoration. The factory finish may be further treated by applying either paste wax or satin finish varnish.

Colored nails used for inconspicuous nailing.

Thickness: ⅜"
Width: 4'
Length: 7', 8', 9', 10'.
Edges and Finish: Beveled edges for sablewood and cherrywood.
Finishes: Square edges for ranch pine finish.

PANEL SHEETROCK

Panel SHEETROCK products have the same core composition as regular SHEETROCK Wallboard, and differ only in width and edge formation.

Plain. Face surface is highly calendered ivory paper suitable for any type of decorative treatment.

Ranch Pine. Face surface is high quality paper on which an accurate photographic reproduction of selected random width knotty pine is printed in color.

Striated. Face surface is a handsome pattern of lengthwise striations of varied widths and depths, predecorated in a neutral tone to accentuate the pattern.

Thickness: ⅜"
Width: 16"
Length: 8', 9', 10'
Edges: Round
Finish: Ivory, Ranch Pine, Striated.

INSULATING SHEETROCK

Insulating SHEETROCK wallboard is made by laminating a sheet of bright aluminum foil on the back surface of BAXBORD or regular SHEETROCK.

Insulation. The bright metal foil has the property of reducing heat flow out of the home in the winter, and into the home in the summer. The thermal insulating value of an air space faced with Insulating SHEETROCK, properly applied in a wall, is equivalent to that of ½" fiber insulating board. On ceilings, in summer, it is equivalent to approximately 2" thickness of fiber insulating board.

Vapor Barrier. Insulating SHEETROCK provides an efficient vapor barrier which resists the passage of moisture vapor through the interior lining of exterior walls, and minimizes the possibility of condensation within the wall, and of consequent failure of the exterior paint film. See page 8 for complete discussion and Vapor Permeability figures.

Limitations of Use

1. Same as General Limitations, page 2.
2. Do not use as a base for ceramic or other tile.

Thickness
Width
Length
Edges
Finish
The same as regular SHEETROCK and BAXBORD.

BAXBORD* GYPSUM BACKING BOARDS

DESCRIPTION

BAXBORD is a low cost, easy to handle gypsum board encased on both sides with strong gray paper.

Three-Eighths Inch—⅜" BAXBORD is manufactured for use as a base for job-laminated double wall SHEETROCK wallboard system, and SHEETROCK Wallboard TRUSSTEEL* Stud Partition System. May also be used as a base for acoustical tile, on ceilings, when nailed perpendicular to wood joists spaced not over 16" o.c.

One-Half Inch. ½" BAXBORD Gypsum Backing Board is the recommended base for adhesively or mechanically applied acoustical tile. Erect ½" BAXBORD at right angles to framing members, nailing 7" on centers for 16" spacing of supports, and 5" on centers for 24" spacing of supports. It may be nailed to metal supporting members such as Jackson, Pomeroy or similar bars, nailable steel joists, or to wood framing.

Five-Eighths Inch—⅝" BAXBORD FIRECODE is manufactured for use as a base for adhesive or mechanical application of acoustical tile when a one-hour fire-rating is required. By Underwriters' Laboratories, Inc. test, an open web steel joint-concrete floor or roof and ceiling construction with ⅝" BAXBORD FIRECODE affords a 60-minute fire resistance rating. "V" shaped edges minimize air and dirt infiltration.

Limitations of Use

1. Same as General Limitations, Page 2.
2. In order to attain the 1-hour fire resistance rating with ⅝" BAXBORD FIRECODE, the construction must be in accordance with the floor or roof and ceiling design listed by Underwriters' Laboratories, Inc. See page 2 for design details.
3. For ⅝" BAXBORD FIRECODE, maximum spacing of framing members; 16" o.c. where fire rating is required, otherwise 24".
4. Where ½" or ⅝" BAXBORD is to be used as acoustical tile base, store acoustical tile and base in a dry area protected from the elements. Provide flat, solid support during storage. Take necessary precautions to prevent condensation in the storage area and within the structure in which the acoustical base is applied.

Thickness: BAXBORD: ⅜", ½"; BAXBORD FIRECODE: ⅝".
Width: ⅜"—2' and 4'; ½" and ⅝"—2' only.
Length: 8'.
Edges: ⅜" BAXBORD, round edge; ½" BAXBORD and ⅝" BAXBORD FIRECODE, "V" edge.
Finish: Gray paper, not suitable as an exposed surface.

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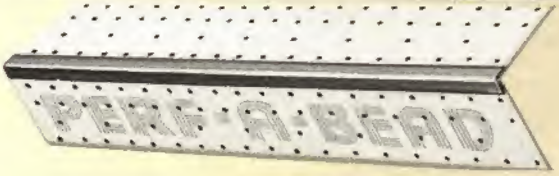
*Trademark Reg. U.S. Pat. Off.

WALLBOARD ACCESSORIES

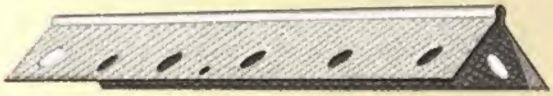
PERF-A-TAPE JOINT SYSTEMS PRODUCTS

PRODUCT	DISTINGUISHING CHARACTERISTICS	FORM	USES AND LIMITATIONS
PERF-A-TAPE Cement—a specially designed dual-purpose cement for filling joints and embedding the joint reinforcing tape to produce smooth, unbroken wall surfaces and to conceal joints between panels of gypsum wallboards.	Easy mixing—tight bonding—durable—smooth working—edge and check crack resistant cement for concealing joints. Special formula minimizes paint discoloration and discoloration from vapor and gas burner gases in air.	Powder	For use on interior joints, corners, and nail heads in gypsum wallboard. May be applied by hand or with mechanical taping tools. Each cement application must be dry before next is applied. May also be used with PERF-A-TAPE in reinforcing cracks in plaster surfaces. Not designed to join wood or wood fibre products. Requires protection against wetting.
PERF-A-TAPE Topping—smooth, fine texture cement for finishing and concealing joint treatments.	Easy Sanding—long working life—excellent "feathering" qualities. No "built-in" factors to contribute to paint discoloration or to contribute to discoloration from vapors or gases in air from gas burners. Excellent finish when dry for further decorative treatments.	Powder	For fine finishing of joints after reinforcing tape embedment, and for nailhead concealment. Each topping application must be dry before next is applied. Completed joint treatment must be thoroughly dry before proceeding with decoration.
All Purpose Ready Mixed PERF-A-TAPE Cement is the ideal material for the reinforcement and concealment of joints in gypsum wallboard construction as well as covering nail heads and forming interior and exterior angles. NOTE: This product not available in far west or southwest areas of the country.	Smooth working, strong—fine texture—easy to sand—edge and check crack resistant ready to use cement. Requires minimum sanding. Very satisfactory surface over which to apply further decorative treatments. Assures uniform cement mixture throughout job.	Ready to use.	For uniform joint results in interior gypsum wallboard installations. Excellent for embedding tape and smooth finished joints, and nail head spotting on gypsum wallboard surfaces. Excellent when used with PERF-A-TAPE in reinforcing cracks in interior plaster surfaces. Not intended for use on wood or wood fibre products. Protect container from freezing. Protect finished application against wetting. Allow to dry thoroughly before proceeding with decoration.
PERF-A-TAPE reinforcement—a specially designed strong thin, chamfered edge tape reinforcement.	Special cross-fibred paper, of great strength both with and across the grain of the paper—feathered thin at the edges—many small random perforations to allow rapid air-escape during embedding. Highly crack resistant.	Rolls	For use with either PERF-A-TAPE Cement or All Purpose PERF-A-TAPE Ready Mixed cement. Outstanding performance when used with companion products for joint reinforcement on gypsum wallboards.

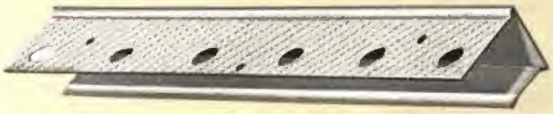
METAL ACCESSORIES FOR WALLBOARD APPLICATION



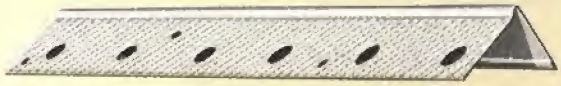
No. 100 PERF-A-BEAD—A metal corner reinforcement formed of electro-galvanized steel with Perf-A-Tape wings. Perf-A-Bead is easily applied with Perf-A-Tape cement and is designed to provide lasting protection in drywall construction. Packaged 200 lineal feet (30 pcs. 6′-8″ or 25 pcs. 8′) per carton. 1,000 lineal feet (150 pcs. 6′-8″ or 125 pcs. 8′ or 100 pcs. 10′) per carton.



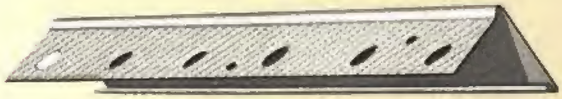
No. 101 DUR-A-BEAD—An excellent guard for external wallboard corners. Made of galvanized steel, it combines lasting protection with ease of application. Easily nailed to framing through gypsum wallboard and concealed with Perf-A-Tape cement to a smooth, finished corner. Packaged 200 lineal feet (30 pcs. 6′-8″ or 25 pcs. 8′) per carton. 1,000 lineal feet (150 pcs. 6′-8″ or 125 pcs. 8′ or 100 pcs. 10′) per carton.



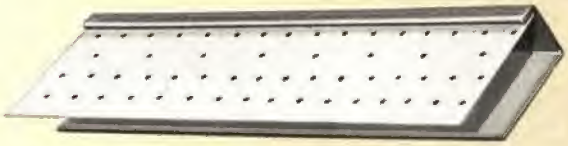
No. 200-A USG METAL TRIM—A strong, channel type steel casing that provides maximum protection and a neat finished edge to gypsum wallboard at window and door jambs. Easily installed by nailing through the channel and wallboard into the framing or jamb. Joints do not have to be mitered but are simply butted together. Perf-A-Tape is used to complete the installation. For use with ½″ gypsum wallboard. Available in 7′-0″ and 10′-0″ lengths; 50 pcs. per carton.



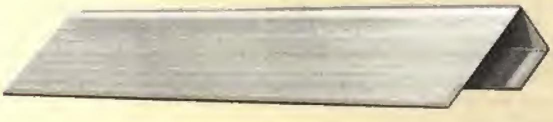
No. 200-B USG METAL TRIM—An angle edge trim whose finished appearance and application is similar to 200-A. By elimination of a back flange, application is simplified. For use with ½″ gypsum wallboard. Available in 7′-0″ and 10′-0″ lengths; 50 pcs. per carton.



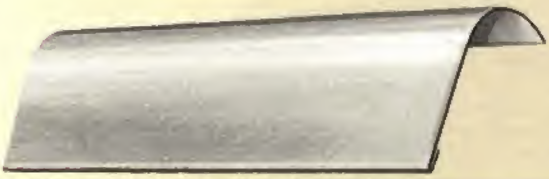
No. 200-C USG METAL TRIM—Requires a slotted jamb for installation. By inserting the open "V" flange into the slot of the jamb this trim is adjustable for use with ⅜″, ½″ and ⅝″ gypsum wallboard. Designed to provide neat, tight fitting joints without precision cutting. Available in 7′-0″ and 10′-0″ lengths; 50 pcs. per carton.



No. 300 PERF-A-TRIM*—An electro-galvanized channel with Perf-A-Tape flange attached. Designed for use as a casing around door and window openings and ceiling angles. Suitable for single or double layer gypsum wallboard construction. Perf-A-Trim is embedded with Perf-A-Tape cement to produce a flush edge reinforcement. Sizes for ⅜″ and ½″ wallboard; available in 7′-0″ and 10′-0″ lengths. Packaged 50 pcs. per carton.



No. 400 USG METAL TRIM—An economical metal channel which provides enduring edge protection. Ideal as trim around door and window openings and as molding at ceiling angles. No finishing cement is required. Available in ⅜″ and ½″ sizes; 7′ and 10′ lengths. Packaged 50 pcs. per carton.



No. 500 USG SNAP-ON-TRIM—Is the modern way of trimming doors and windows in drywall construction. An attractive all metal bull nose trim which fits quickly and easily into a kerf cut into the jamb. Standard packages contain enough pre-cut material for two sides of six doors or twelve windows.

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*T.M. Reg. U.S. Pat. Off

SINGLE LAYER SYSTEM USING SHEETROCK

wallboard for walls, ceilings, partitions—over wood framing

DESCRIPTION

SHEETROCK is usually nailed directly to wood framing members, applying ceilings first, then walls. Boards should be accurately cut to fit and joints loosely butted. End joints should be staggered. Apply SHEETROCK either vertically with long edges parallel to framing members, or horizontally, with long edges at right angles to framing. SHEETROCK may be attached to supports by several methods. The standard practice is single nailing, nails spaced 7" o.c. on ceilings and 8" o.c. on walls.

ALTERNATE NAILING METHODS

SHEETROCK Brand Adhesive—Nail-On. See technical details and specifications page 11.

Double Nailing Method. Nailing defects due to loosely nailed wallboard, may be minimized by double nailing. Apply first nails spaced 12" o.c. with the second nail in close proximity (2"). Double nailing is generally more effective in combating loose application of wallboards than the standard single nailing method, but does not provide the advantages of SHEETROCK Brand Adhesive Nail on method in minimizing "nail-pop" frequency due to wet lumber.

Furring system—SHEETROCK may also be nailed on furring strips installed over a solid backing, such as an existing wall surface.

PRODUCTS AND ACCESSORIES

Tapered Edge, FIRECODE, Insulating or Wood Grained SHEETROCK; PERF-A-TAPE Joint Cement and Topping or All Purpose Ready Mixed PERF-A-TAPE Cement, PERF-A-TAPE Reinforcing Tape; and GWB-54; or 4d, 5d, 6d cooler type nails. Optional: DUR-A-BEAD or PERF-A-BEAD Corner Reinforcement.

FUNCTION AND UTILITY OF HORIZONTAL APPLICATION

1. Reduces necessary joint treatment footage up to 25 per cent.
2. Strongest dimension of board runs across framing members.
3. Spans unevenness of framing members' alignment and spacing.
4. Eliminates need for headers.
5. Each board braces more framing members together.
6. Joints on walls are at a convenient height for finishing.

LIMITATIONS OF USE—See page 2.

BACK-BLOCKING JOINT REINFORCEMENT

Back-Blocking was designed by U. S. Gypsum Company to minimize the condition known as "ridging." The Back-Blocking system, Research approved, has been extensively field tested and produces outstanding results, and is a U.S. Gypsum Company Patented System. (Pat. No. 2736929). A non-exclusive license to use is available on request.

Back-Blocking consists of laminating cut-to-size pieces of SHEETROCK Wallboard to the back surface of the wallboard directly behind the joints providing reinforcement to neutralize stresses which cause ridging.

We recommend Back-Blocking all joints along tapered edges, and floating and Back-Blocking all end joints, side walls and ceilings. End joints, side walls and ceilings may be tapered at the discretion of the owner, architect, contractor or applicator.

PERF-A-TAPE JOINT REINFORCEMENT AND CONCEALMENT

PERF-A-TAPE Joint Cement or All Purpose Ready Mixed PERF-A-TAPE Cement is used to apply and bond PERF-A-TAPE to wallboard. PERF-A-TAPE Joint Cement, Topping, or All Purpose Ready Mixed PERF-A-TAPE Cement is applied to conceal and finish taped joints and nail heads.

SHEETROCK	Bending Radii	
THICKNESS	LENGTHWISE	WIDTH
½"	20'**	..
⅜"	7½'	25'
¼"	5'	15'

**Bending two ¼" pieces successively permits radii shown for ¼" SHEETROCK.

BENDING SHEETROCK

To bend SHEETROCK wallboard, place a stop at one end of the curve and then gently and gradually push on the other end of the board, forcing the center against the framing until the curve is complete.

By moistening the face and back paper thoroughly and allowing the water to soak well into the core, the board may be bent to still shorter radii. When the board dries thoroughly, it will regain its original hardness.

DOUBLE WALL SYSTEM USING SHEETROCK

wallboard for walls, ceilings, partitions—over wood framing

DESCRIPTION

This consists of two layers of gypsum wallboard laminated together on the job. A base layer of BAXBORD or SHEETROCK is nailed to the framing, and a face layer of SHEETROCK is adhesively applied to the base layer. SHEETROCK joints are reinforced and covered by PERF-A-TAPE Joint System.

PRODUCTS AND ACCESSORIES

⅜" or ½" BAXBORD or Tapered Edge SHEETROCK (plain or insulating type) for base layer; ⅜" Tapered Edge, Wood Grained or Panel SHEETROCK for face layer; PERF-A-TAPE Joint Cement; PERF-A-TAPE Topping; (or All Purpose Ready Mixed PERF-A-TAPE Cement); PERF-A-TAPE Reinforcing Tape; 4d cooler type or GWB-54 nails Optional: DUR-A-BEAD* or PERF-A-BEAD* Corner Reinforcement.

FUNCTION AND UTILITY

Walls and ceilings so constructed offer greater strength, greater fire resistance and greater resistance to sound transmission. Moreover, they're highly resistant to cracking, easy to decorate; and they minimize the possibility of nail "pops" and discoloration over nail heads. Speedy erection cuts building time, permits early occupancy.

LIMITATIONS OF USE—See page 2.

(items 1 and 2 under General Limitations)

3. Maximum Spacing of Framing Members:
   Ceilings—⅜" Base layer maximum spacing 16" o.c.
      If 24" spacing is to be used, ½" SHEETROCK or ½" BAXBORD applied with the long dimension across the framing must be used as a base layer.
   Side walls—⅜" BAXBORD or SHEETROCK may be used on spacing up to 24" o.c. as a base layer.
4. Framing shall be spaced not over 16" o.c. where a 1 hour fire rating is required.

PANEL SHEETROCK WALLBOARD SYSTEM

Finish for walls, partitions—over wood framing

DESCRIPTION

This panel wallboard is nailed in a single layer direct to wood framing in new or existing construction. The 16" wide round edge units are butted together to feature the joint. No further treatment of the joint is necessary. Application to existing walls is sometimes done adhesively, using PERF-A-TAPE Joint Cement. With plain ivory Panel SHEETROCK, suitable for painting, nails are concealed with PERF-A-TAPE Topping. With Ranch Pine and Striated Panel SHEETROCK, matching colored nails are used.

PRODUCTS AND ACCESSORIES

Panel SHEETROCK; either plain nails with PERF-A-TAPE Cement nail concealment; colored nails; or adhesive.

FUNCTION AND UTILITY

Featured joints provide a pleasing paneled effect. Lightweight, easy to handle panels provide quick erection. Ideal for new construction or for covering existing walls. Fits any modern decor.

LIMITATIONS—See page 2.

NOTE: The paint film at Plain Panel SHEETROCK joints may discolor slightly over an extended period if panels are erected at right angles to furring, on walls with extreme temperature and humidity differentials, on each side of the panels.

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*T.M. Reg. U.S. Pat. Off.

INSULATING SHEETROCK WALLBOARD (FOIL BACK) VAPOR BARRIER SYSTEM

For ceiling, and exterior walls—over wood framing

DESCRIPTION

Insulating SHEETROCK wallboard is made by laminating a sheet of bright aluminum foil on the back surface of any SHEETROCK except Panel. It is effective as a vapor barrier for exterior walls and ceilings when applied (1) with foil surface next to the studs in single layer application or (2) as the base layer (with foil surface next to the studs) in the double layer system. A thermal insulating value is achieved when SHEETROCK is installed with the aluminum foil facing an air space of ¾" or more.

PRODUCTS AND ACCESSORIES

Insulating Tapered Edge, FIRECODE or Wood Grained SHEETROCK (also BAXBORD for double layer installation); PERF-A-TAPE Joint Cement; PERF-A-TAPE Topping; (or All Purpose Ready Mixed PERF-A-TAPE Cement); PERF-A-TAPE Reinforcing Tape; GWB-54, 4D, 5D or 6D nails. Optional: DUR-A-BEAD or PERF-A-BEAD Corner Reinforcement.

FUNCTION AND UTILITY

Vapor Barrier. Insulating SHEETROCK provides an efficient vapor barrier which resists the passage of moisture vapor through the interior lining of exterior walls, and minimizes the possibility of condensation within the wall, and of consequent failure of the exterior paint film. See Technical Data for complete discussion and Vapor Permeability figures.

Insulation—Insulating SHEETROCK wallboard installations keep interiors cooler in the summer by reducing heat flow into the home, and in the winter keep interiors warmer and fuel bills lower by reducing the heat flow upward and outward.

SHEETROCK WALLBOARD AS A BASE FOR CERAMIC OR OTHER TILE—*Adhesive Application*

DESCRIPTION

SHEETROCK is recommended as a base for walls which are finished with ceramic or other type tile, in bathrooms, kitchens, corridors, stairways, etc. In new construction ½" or ⅝" SHEETROCK is nailed direct to studs 16" c to c. ⅜" SHEETROCK when used must be further supported by attachment to headers placed between studs at various points. (See Limitation of Use below). In bathrooms the SHEETROCK and tile should be carried at least 6" above the shower head. SHEETROCK should receive two coats of varnish or other waterproofing agent before adhesive and tiles are applied.

PRODUCTS AND ACCESSORIES

⅜", ½", ⅝" tapered edge SHEETROCK; GWB-54 or 4D nails; varnish or other waterproofing agent compatible with adhesive; adhesive (specified by tile manufacturer) and tile. Optional: metal trim.

FUNCTION AND UTILITY

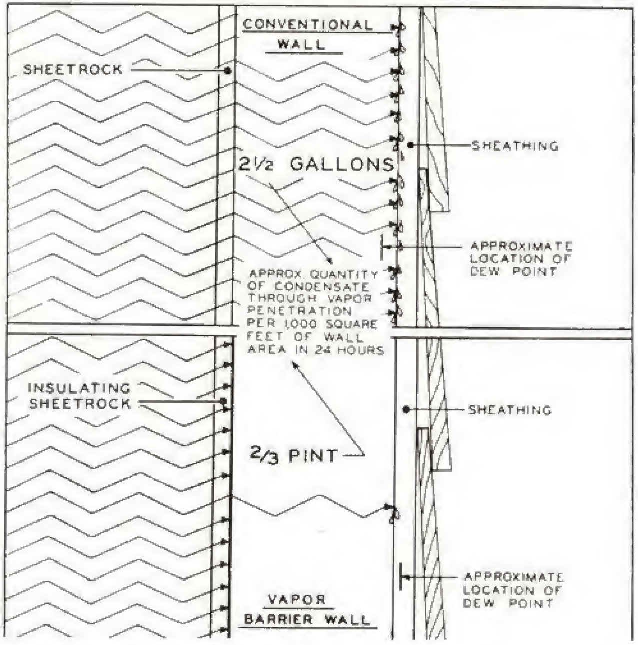
Using SHEETROCK as a base, new tilework may be installed over existing surfaces without tearing out old walls. Erection is fast; there is no waiting for mortar coats to set; there is less cleanup afterwards. SHEETROCK as a base is lightweight, yet strong; it is easy to handle. There may be some overall lowering of initial and maintenance costs.

LIMITATIONS OF USE

1. Foil backed (insulating) SHEETROCK or BAXBORD should not be used as backing for tile.
2. When ⅜" SHEETROCK is to be used on studs spaced 16" o.c. or ½" or ⅝" SHEETROCK on studs spaced more than 16" o.c., suitable blocking shall be installed between all studs: one row of blocking located approximately 1" above the top of the tub or receptor and another row at the mid point between the tub and ceiling.

ILLUSTRATION OF IMPORTANCE OF VAPOR BARRIER

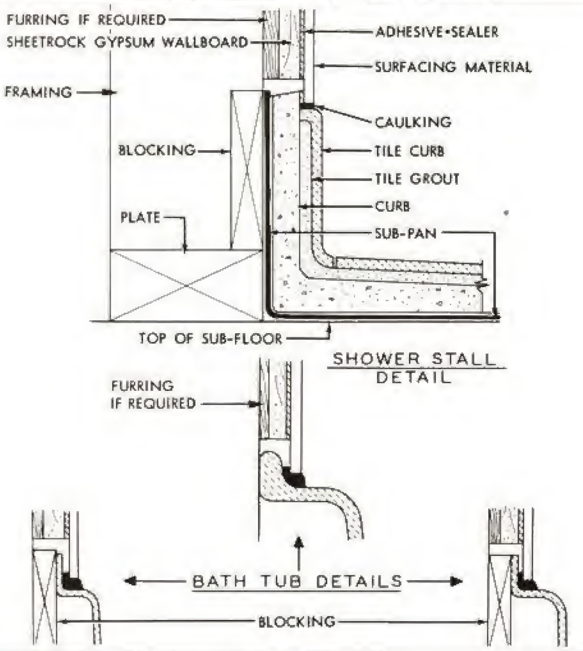
INSIDE ATMOSPHERE		OUTSIDE ATMOSPHERE
70°F	TEMPERATURE	10°F
45%	RELATIVE HUMIDITY	90%
3.63	GRAINS MOISTURE PER CU. FT.	0.69
0.332 IN.HG.	RESULTANT VAPOR PRESSURE	0.067 IN.HG.


CONVENTIONAL WALL
SHEETROCK
SHEATHING
2½ GALLONS
APPROXIMATE LOCATION OF DEW POINT
APPROX QUANTITY OF CONDENSATE THROUGH VAPOR PENETRATION PER 1000 SQUARE FEET OF WALL AREA IN 24 HOURS
INSULATING SHEETROCK
SHEATHING
2/3 PINT
APPROXIMATE LOCATION OF DEW POINT
VAPOR BARRIER WALL

Vapor Permeability of Insulating SHEETROCK

A vapor barrier construction should not have a vapor permeability of more than 1.00 perm. Insulating SHEETROCK Wallboard meets ASTM requirements for a vapor permeability not exceeding 0.30 perms. for foil-baked Gypsum Wallboard.

1 Perm.=1 grain per sq. ft. per hour per inch of mercury vapor pressure difference.



SHEETROCK WALLBOARD TRUSSTEEL STUD PARTITION SYSTEM

Finish for non-bearing partitions

DESCRIPTION

The SHEETROCK Wallboard TRUSSTEEL Stud Partition System is a non-load bearing partition consisting of lightweight, open-web steel studs faced on each flange with a base layer of 3/8", 2' wide by 8' long BAXBORD Gypsum Backing Board clipped to the studs and surfaced with a face layer of 3/8" SHEETROCK Gypsum Wallboard 16" wide or 4' wide adhesively bonded to the base layer. Either metal or wood floor and ceiling runners may be used, depending upon code regulations or insurance requirements.

PRODUCTS AND ACCESSORIES

3/8" BAXBORD; 3/8" Tapered Edge SHEETROCK; PERF-A-TAPE Joint Cement; PERF-A-TAPE Topping; (or All Purpose Ready Mixed PERF-A-TAPE Cement); PERF-A-TAPE Reinforcing Tape; PERF-A-BEAD and DUR-A-BEAD Corner Reinforcement; TRUSSTEEL Studs Snap-In runner track; shoes (when required); TRUS-LOK *TL-1 and TL-DRIVE-IN Starter Clips; BRIDJOINT* B-1 Clip.

Stud Width	Maximum Stud Spacings	Maximum Partition Height	Finished Wall Thickness (1) Snap-In Track and Shoes	Finished Wall Thickness (1) Snap-In Track Only
1 5/8" (2)	16" o.c.	10'	3 15/16"	3 13/16"
2 1/2"	24" o.c.	10'	4 9/16"	4 7/16"
3 1/4"	24" o.c.	12'	5 5/16"	5 3/16"
4"	24" o.c.	14'	6 1/16"	5 15/16"
6"	24" o.c.	14'	8 1/16" (3)	Not applicable

(1) All finished wall thicknesses except those for 1 5/8" stud width (see (2)) are based on 3/8" face layers.

(2) Data for 1 hr. fire rated assembly with 1/2" SHEETROCK FIRECODE facings and stud shoes (except for finished wall thickness with snap-in track only.)

(3) 6" Snap-in track not available—For 6" wide studs use 6" standard track and shoes.

FUNCTION AND UTILITY

Fire Resistant—Consists of incombustible steel studs and attachment accessories plus SHEETROCK Gypsum Wallboard facings—gypsum wallboard has a flame spread rating of 15 or less.

Fire Resistance Rating—45 minutes with 3/8" SHEETROCK Gypsum Wallboard face layer, 1 hour with 1/2" SHEETROCK Firecode face layer (studs spaced 16" o.c.)—nationally recognized fire testing laboratory—name and special details on request. NOTE: To attain rated assembly, stud attachment shoes (at ceiling only) are required. Where fire rating not required and/or ceiling height variation permits use of studs pre-cut to length, stud shoes may be eliminated.

Sound Transmission Rating—Approx. 45 db. (studs spaced 16" o.c.) Test made by nationally recognized sound testing laboratory.

Open-web stud—The open-web stud design simplifies installation of electrical conduit and plumbing pipes—generally no cutting of stud is required.

Lightweight—The finished partition will weigh approximately 7 lbs. per square foot—less than most other steel stud partitions with 3/4" or 7/8" thick facing materials.

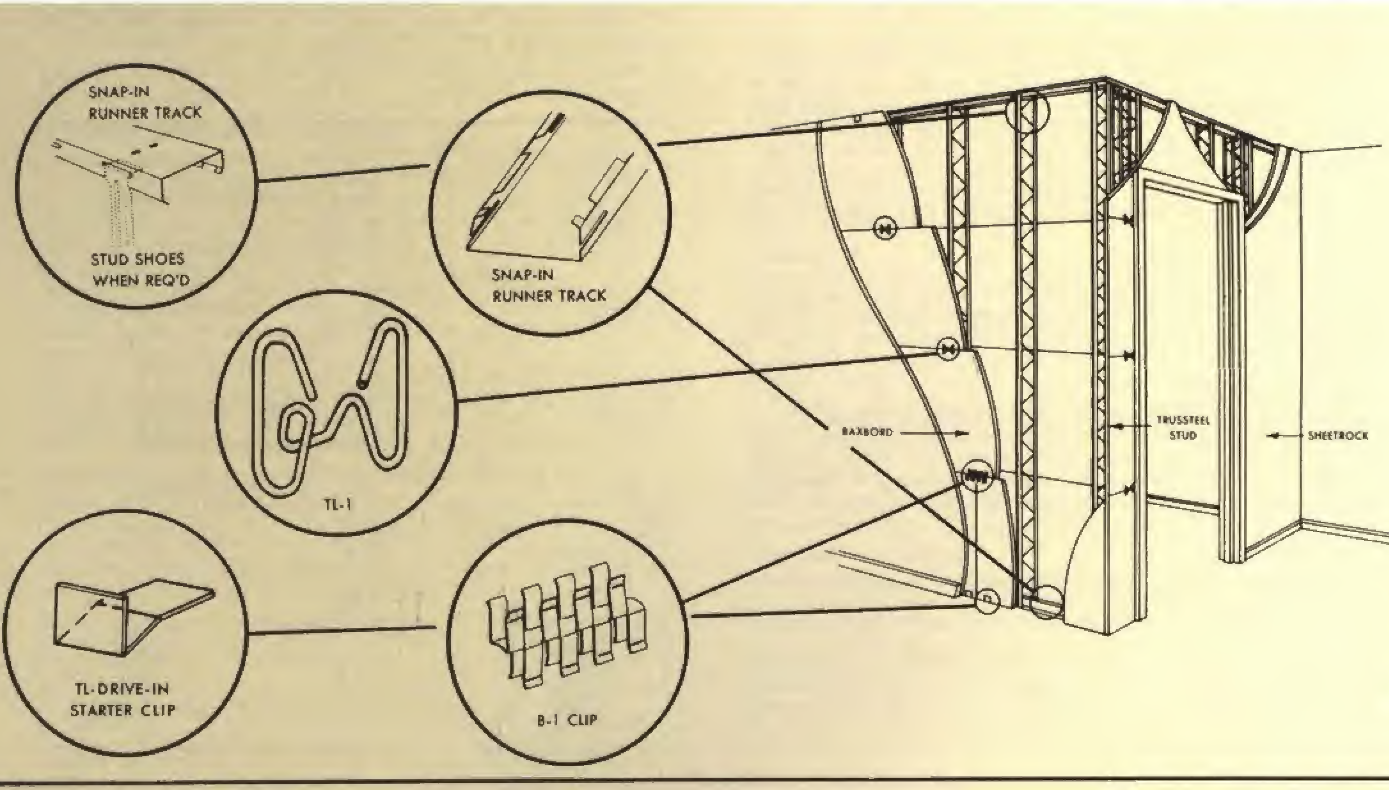
Economical—Because of low material cost, speedy erection, drywall assembly.

Adaptability—May be used in new construction or for modernizing old buildings—for commercial, industrial or residential work. During modernization, the normal work can progress with a minimum of mess and disturbance.

LIMITATIONS OF USE

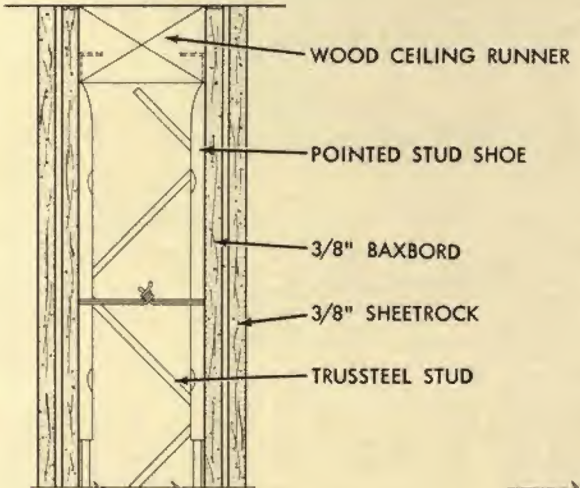
1. The SHEETROCK Wallboard TRUSSTEEL Stud Partition System was designed for use only as a non-bearing partition.
2. Maximum stud spacing 24" o.c.
3. Should not be used where normally exposed to excessive moisture or humidity.
4. SHEETROCK facings shall be adequately protected against wetting or moisture absorption.

*T.M. Reg. U.S. Pat. Off.

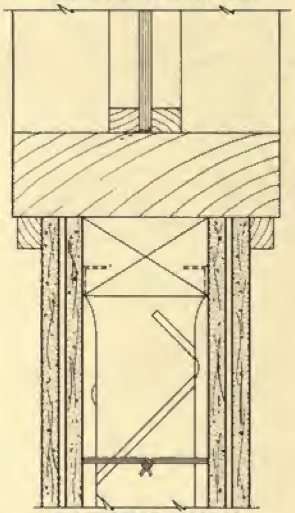


CEILING ATTACHMENTS—CHALKBOARD—BASE DETAILS

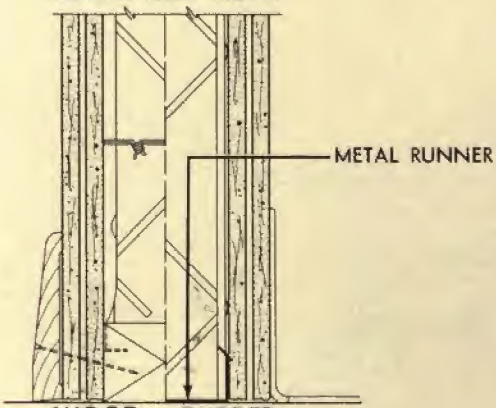
Scale: 3" = 1'-0"



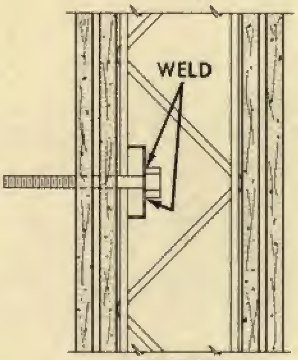
WOOD CEILING RUNNER



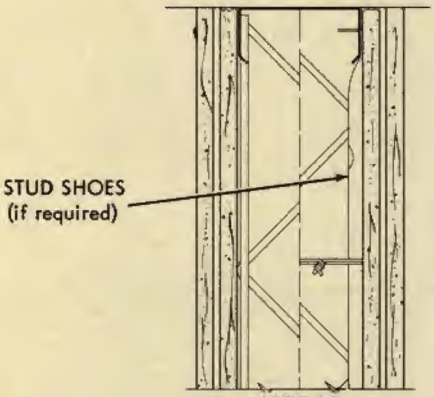
SECTION THRU BORROWED LIGHT



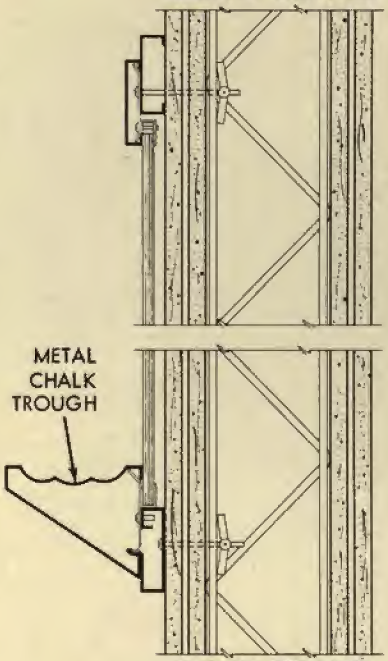
WOOD TRIM **RUBBER BASE**



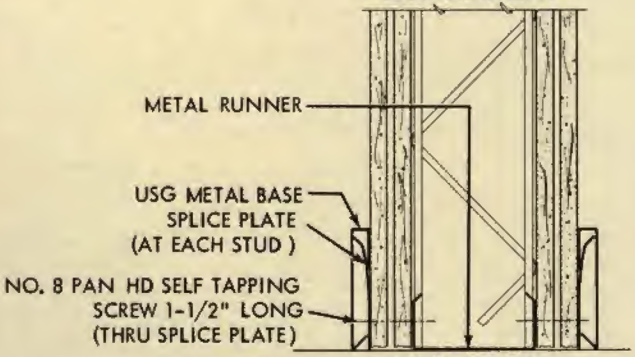
FIXTURE ATTACHMENT



METAL CEILING RUNNER



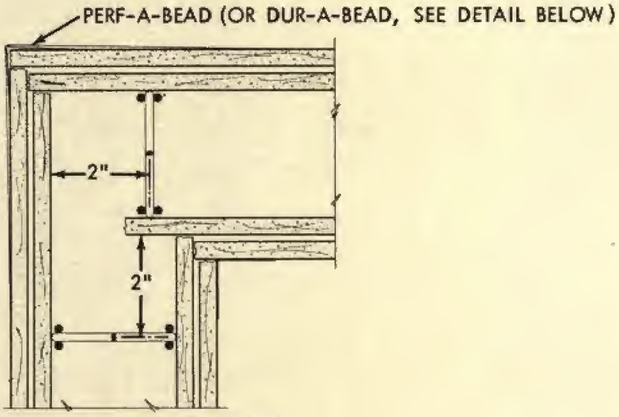
CHALK BOARD ATTACHMENT



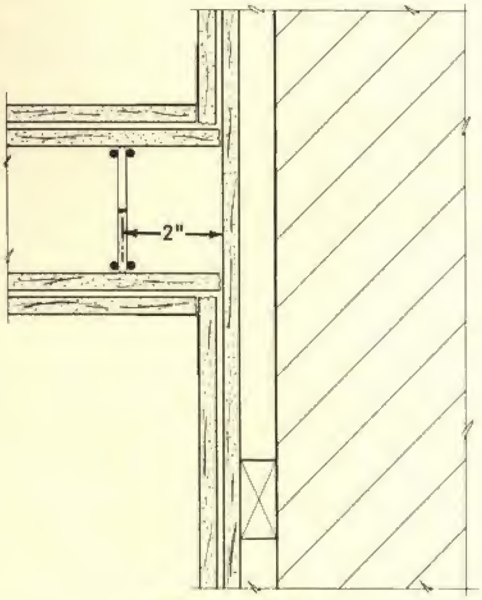
METAL BASE

PARTITION ASSEMBLIES & OUTLET BOX

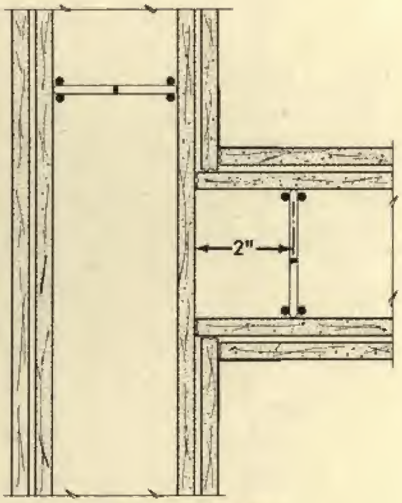
Scale: 3" = 1'-0"



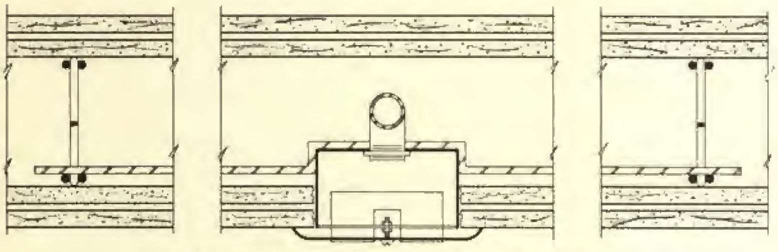
INTERIOR CORNER



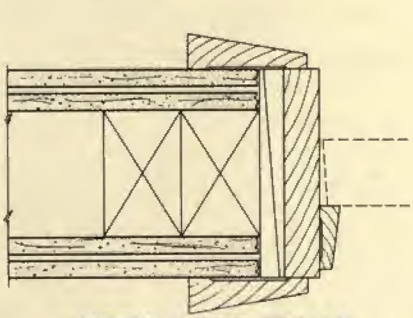
FURRED WALL



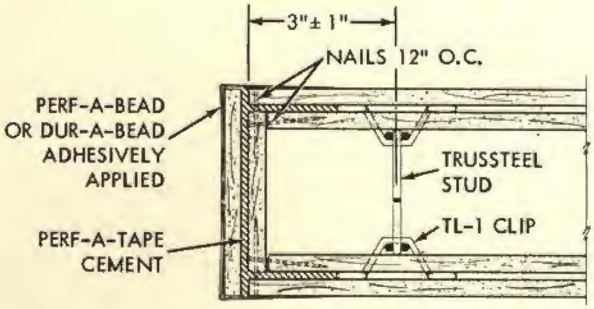
INTERSECTING PARTITION



PLAN SECTION THRU OUTLET BOX



WOOD DOOR FRAME

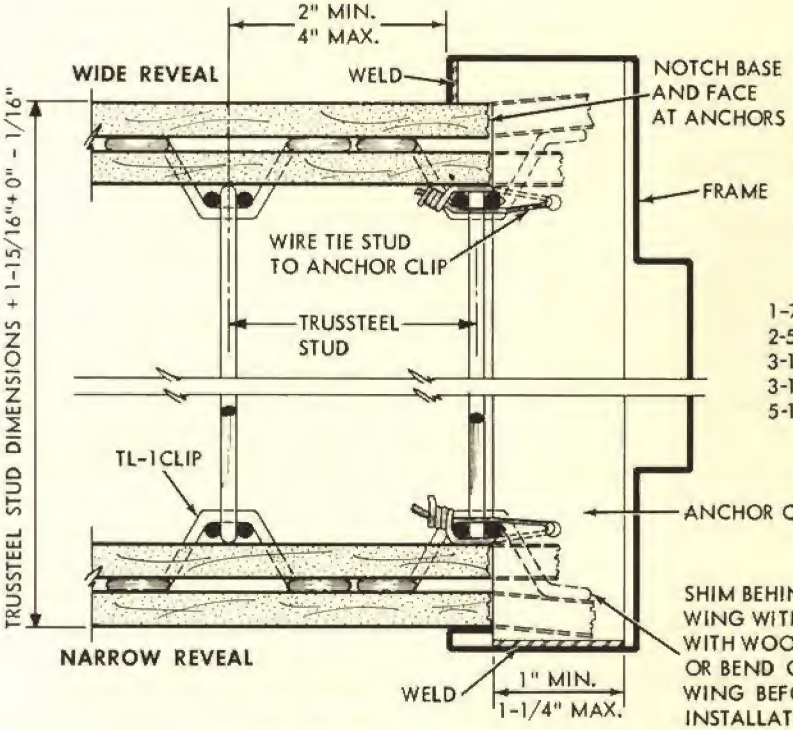


PARTITION TERMINAL DETAIL

*T.M. Reg. U.S. Pat. Off.

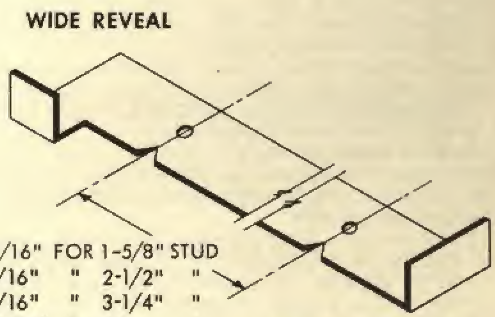
METAL DOOR FRAMES

Scale: 6" = 1'-0" (Head & Jamb Section Only)



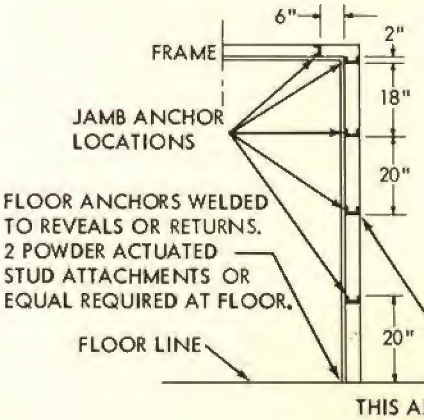
SHIM BEHIND TL-1 CLIP WING WITHIN FRAME WITH WOOD SHINGLE OR BEND OUT CLIP WING BEFORE CLIP INSTALLATION TO FORCE FACE BOARD AGAINST FRAME RETURN.

DOOR FRAME - JAMB



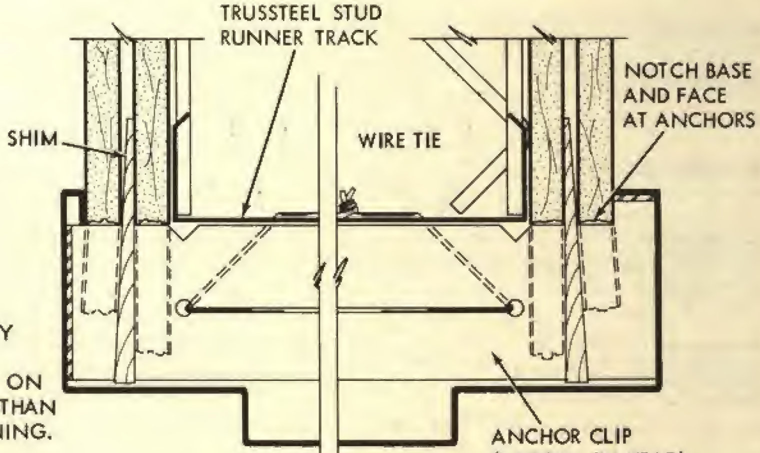
1-7/16" FOR 1-5/8" STUD
2-5/16" " 2-1/2" "
3-1/16" " 3-1/4" "
3-13/16" " 4" "
5-13/16" " 6" "

ANCHOR CLIP


6"
2"
FRAME
18"
JAMB ANCHOR LOCATIONS
20"
FLOOR ANCHORS WELDED TO REVEALS OR RETURNS. 2 POWDER ACTUATED STUD ATTACHMENTS OR EQUAL REQUIRED AT FLOOR.
20"
FLOOR LINE

THIS ANCHOR MAY BE OMITTED ON HINGE SIDE ONLY ON DOORS WITH LESS THAN 6' - 8" HIGH OPENING.

JAMB ANCHOR LOCATIONS


TRUSSTEEL STUD RUNNER TRACK
SHIM
WIRE TIE
NOTCH BASE AND FACE AT ANCHORS
ANCHOR CLIP (2 REQD. IN HEAD)

DOOR FRAME - HEAD

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*T.M. Reg. U.S. Pat. Off.

SHEETROCK
GYPSUM WALLBOARD

SHEETROCK BRAND ADHESIVE

DESCRIPTION

Sheetrock Brand Adhesive is specially formulated to adhere Sheetrock Gypsum Wallboard (Plain and/or Foil Back) to wood framing members in conjunction with supplemental nailing. This adhesive is of a rubber, resin type, plastic in nature and is resistant to moisture, vermin and heat.

Important Note: "Meets Dry-Wall Adhesive Manufacturers Association Specifications."

FUNCTION AND UTILITY

Sheetrock Brand Adhesive, when properly applied, provides the following added qualities not available with conventional single layer nail-on application:

Reduction of Nail Defects—Nails in surface reduced by 50%. Cushioning effect reduces nail head fracturing of face paper. Incidence of loose board minimized by added area of contact.

Bridges Minor Framing Irregularities

Reduces Impact Sound

Retention of Fire Resistance—Tests show adhesive does not detract from inherent fire resistant qualities of gypsum wallboard.

LIMITATIONS OF USE

1. All surfaces coming in contact with the adhesive should be free of dirt, grease, oil or other foreign material.
2. The adhesive should be stored at approximately 70°F. for 24 hours prior to application to facilitate ease of flow.
3. Adequate ventilation should be provided.
4. Normal precautions (for a flammable material) should be employed regarding proximity to fire, sparks or smoking prior to evaporation of volatile material.
5. The adhesive should be kept in the original unopened container or enclosed in such a manner as to prevent evaporation of volatile materials.
6. Carbon tetrachloride or a petroleum solvent, such as Naptha or white gasoline, should be used to remove excess adhesive or to clean tools.
7. No adhesive shall be applied more than 15 minutes in advance of installation of the gypsum wallboard.

SPECIFICATIONS

I. SCOPE

NOTE: To Architect—This system augments but does not replace back-blocking. Where adhesive, nail-on method of attachment is to be specified, include the following:

All framing members to which Sheetrock is to be fastened shall receive a bead of adhesive. This excludes all members not used as a nailing base.

II. GENERAL CONDITIONS

Adequate ventilation shall be provided to allow escape of fumes emitted by volatile materials.

III. MATERIALS

E. Adhesive—shall be Sheetrock Brand Adhesive.

IV. TOOLS shall be

1. Drywall Adhesive Applicator—Model "A-3"
2. Alemite Loader Pump—Model 7197-L
3. Ames Mastic Meter and Pump
4. Standard Caulking Gun for Cartridge Application

V. ERECTION

NOTE: To Architect—Where adhesive, nail-on method of attachment is to be specified, include the following:

A continuous bead of adhesive of sufficient size to completely cover the face of the nailing members when flattened to a thickness of 1/16", shall be applied immediately prior to erection of the gypsum wallboard. No adhesive shall be applied more than 15 minutes prior to being covered with wallboard. Where two adjoining edges of the wallboard occur on one member, a serpentine bead of adhesive shall be applied.

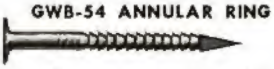
Each panel of gypsum wallboard will be completely nailed immediately after it comes in contact with the adhesive.

Any excess adhesive on exposed surfaces shall be removed.

Adhesive is not required at inside corners, top or bottom plates, bracing or fire stops, and is not ordinarily used in closets.

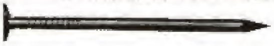
NAIL SPECIFICATIONS FOR SHEETROCK* WALLBOARD

GWB-54 ANNULAR RING NAIL



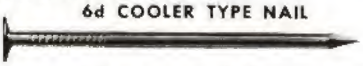
¼" Head, 1¼" Long, .098 Gauge
Approx. 355 per lb. (ASTM-C380-56T)

4d COOLER TYPE NAIL

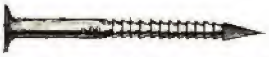


7/32" Flat Head, 1⅜" Long, 14 Gauge
Approx. 488 per lb.

6d COOLER TYPE NAIL

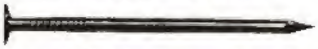


¼" Flat Head, 1⅞" Long, 13 Gauge
Approx. 275 per lb.



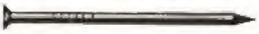
¼" Head, 1⅜" Long, .098 Gauge
Approx. 315 per lb.

5d COOLER TYPE NAIL



15/64" Flat Head, 1⅝" Long, 13½ Gauge
Approx. 364 per lb.

COLORED NAILS



1⅛" Long. Approx. 840 per lb.

SHEETROCK Wallboard		TYPE OF NAIL	LBS. PER 1000 SQ. FT.	SPACING OF NAILS (Standard Single Nailing)
⅝" SHEETROCK		1⅜" Annular Ring Type	4¾	7" on ceilings 8" on walls
½" SHEETROCK		GWB-54 or 5d COOLER	6¼ 6	7" on ceilings 8" on walls
⅜" SHEETROCK		GWB-54 or 4d COOLER	6¼ 4½	7" on ceilings 8" on walls
¼" SHEETROCK	Direct to framework	GWB-54 or 4d COOLER	6¼ 4½	7" on ceilings 8" on walls
	Over existing surfaces	6d COOLER	6¼	7" on ceilings 8" on walls
⅝" FIRECODE		6d COOLER	6¼	6" on ceilings
½" SHEETROCK FIRECODE		5d COOLER	6¼	7" on walls
⅜" BAXBORD		GWB-54 or 4d COOLER	6¼ 4½	7" on ceilings 8" on walls
Woodgrained SHEETROCK		1⅛" MATCHING COLOR	2	12" on walls
Ranch Pine Panel SHEETROCK		1⅛" MATCHING COLOR	3	12" on walls
Striated Panel SHEETROCK		1⅛" MATCHING COLOR	3	12" on walls
Plain Panel SHEETROCK	Nailed to framework	GWB-54 or 3d COOLER	6¼ 3	12" on walls
	Nailed to 1" nominal thick furring	GWB-54 3d COOLER	6¼ 3	12" walls

SINGLE LAYER SHEETROCK SYSTEM

(Treated Joints)

NOTE: To Architect: For specifications covering PERF-A-TAPE Joint System, see Page 18.

I. SCOPE

Furnish all labor, materials, and equipment to surface all interior walls and ceilings, with gypsum wallboard in accordance with specifications and drawings.

(Back-Blocking)

NOTE: To Architect: When Back-Blocking is to be specified, include the following:

A. All ceiling end joints shall be floated, back-blocked and tapered (except at perimeter of room).

B. All ceiling edge joints shall be back-blocked (except at perimeter of room).

C. All side wall edge joints shall be back-blocked.

D. All side wall end joints shall be floated, back-blocked and tapered.

II. GENERAL CONDITIONS

In cold weather when Back-Blocking is used, the building shall be heated during the application of the gypsum wallboard to maintain a uniform temperature in the range of 45°F. to 70°F., and ventilation shall be provided to eliminate excessive moisture.

All materials as specified above shall be delivered to the job in original unopened containers or bundles, stored in a place protected from exposure to the elements and from damage by tampering, and used in strict accordance with manufacturer's directions.

III. MATERIALS

A. GYPSUM WALLBOARD—shall be SHEETROCK Gypsum Wallboard manufactured by the United States Gypsum Company in the following types and sizes as required:

1. (⅜") (½") (⅝") Tapered Edge (Plain) (Insulating) SHEETROCK 48" wide and in lengths as long as practical to minimize the number of joints.
2. (½") (Plain) (Insulating) ½" and ⅝" SHEETROCK FIRECODE, 48" wide and in lengths as long as practical to minimize the number of joints.

NOTE: To Architect: When Back-Blocking is to be specified, include the following:

Backing-blocks shall be ⅜", ½" or ⅝" SHEETROCK Gypsum Wallboard manufactured by United States Gypsum Company. When foil-backed backing-blocks are used, adhesive shall be applied to manila face side of blocks, not to foil side.

Adhesive shall be PERF-A-TAPE Cement (embedding type) manufactured by United States Gypsum Company.

B. NAILS—shall be:

1. GWB-54 (ASTM-C380-56T) annular ring, ¼" head, 1¼" long, .098 gauge, medium diamond point nail.
2. Annular ring type, ¼" head, 1⅜" long, .098 gauge, medium diamond point.
3. 4d cooler type, $\frac{7}{32}$" flat head, 14 gauge, diamond point nail.
4. 5d cooler type, $\frac{15}{64}$" flat head, 13½ gauge, diamond point nail.
5. 6d cooler type, ¼" flat head, 13 gauge, diamond point nail.

C. CORNER BEAD—shall be USG (#101 DUR-A-BEAD) (#100 PERF-A-BEAD) Corner Reinforcement.

D. METAL TRIM—shall be USG:

1. (⅜") (½") #300 PERF-A-TRIM*
2. (⅜") (½") #400 Metal Trim
3. #500 SNAP-ON TRIM
4. (#200-A) (#200-B) (#200-C) Metal Trim

IV. ERECTION

All ends and edges of all gypsum wallboard shall occur over nailing members, except when joints are at right angles to framing members as in horizontal application or when the end joints are to be back-blocked.

NOTE: To Architect: When Back-Blocking is to be specified, include the following and delete the preceding paragraph:

A. All SHEETROCK Gypsum Wallboard shall be applied with the long edges at right angles to the framing. (Wood backing behind joints between framing supports is not required.)

B. (When floated, back-blocked and tapered, end joints are specified in Section I) gypsum wallboards shall be so positioned that the end joints shall occur midway between supports and these joints shall be backblocked and tapered in accordance with directions published by the United States Gypsum Company.

C. Backing-blocks shall be applied (when specified in Sections I A, B or C) in strict accordance with directions published by the United States Gypsum Company.

(End of note)

SHEETROCK shall be applied first to the ceiling and then to the walls. To minimize end joints, use wallboards of maximum practical lengths. Boards shall be brought into contact, but shall not be forced into place. Where ends or edges abut, they shall be neatly fitted.

End joints shall be staggered. Joints on opposite sides of a partition shall be so arranged as to occur on different studs.

Nails shall be spaced not less than ⅜ inch from edges and ends of wallboard. Nails on all framing members shall be spaced and driven as recommended for specified nailing method. Nails shall not be staggered on adjoining edges or ends.

NOTE to Architect: Specify nailing method.

Wallboard shall be attached to framing supports by:

A. Standard Single Nailing Method.

B. Adhesive—Nail-on method. (Specification on page 13)

C. Double Nailing Method.

(For ⅜" SHEETROCK wallboard, nails shall be 4d cooler type or GWB-54 type) (For ½" SHEETROCK, nails shall be GWB-54 type or 5d cooler type) (For ⅝" SHEETROCK nails shall be 1⅜" annular ring type) (For ⅝" SHEETROCK FIRECODE nails shall be 6d cooler type) (For ½" SHEETROCK FIRECODE nails shall be 5d cooler type)

While the nails are being driven, the wallboard shall be held in firm contact with the underlying support. Nailing should proceed from central portion of the wallboard toward ends and edges. The nails shall be driven home with the heads slightly below the surface of the gypsum wallboard, in a dimple formed by the crowned face of the driving tool striking the last blow. A nail set shall not be used and care shall be taken to avoid breaking the paper face.

When necessary to cut ends, edges, scribe or make cutouts within the field of the wallboard, it shall be done in a workmanlike manner.

(#100 PERF-A-BEAD) (#101 DUR-A-BEAD) shall be applied to all external angles in strict accordance with the manufacturer's directions.

DOUBLE WALL SYSTEM USING SHEETROCK WALLBOARD

(NOTE: To Architect: For Specifications covering PERF-A-TAPE Joint System, see Page 16.)

I. SCOPE

Furnish all labor, material and equipment necessary to surface all interior walls and ceilings with gypsum wallboard in accordance with the specifications and drawings.

Surface all ceilings and walls with a base layer of ⅜" BAXBOARD or ⅜" SHEETROCK (½" SHEETROCK on ceilings where joists are spaced in excess of 16" O.C.), and a face layer of ⅜" SHEETROCK wallboard, adhesively bonded to the base layer.

II. GENERAL CONDITIONS

In cold weather, the building shall be heated during the application of the gypsum wallboard to maintain a uniform temperature in the range of 45°F. to 70°F. and ventilation shall be provided to eliminate excessive moisture.

All materials as specified shall be delivered to the job in original unopened containers or bundles, stored in a place protected from exposure to the elements and from damage by tampering, and used in strict accordance with manufacturer's directions.

III. MATERIALS

A. GYPSUM WALLBOARD—shall be (Plain) (Insulating), (⅜" BAXBOARD, 4'x8', round edge) (⅜" SHEETROCK, 4' wide, lengths from 8' to 14') (½" SHEETROCK, 4' wide, lengths from 8' to 14') (½" BAXBORD, 2' wide, length 8') as manufactured by the United States Gypsum Company.

B. NAILS—shall be

1. GWB-54 (ASTM-C380-56T) annular ring ¼" head, 1¼" long, .098 gauge, medium diamond point.
2. 4d cooler type, 7/32" flat head, 1⅜" long, 14 gauge, diamond point.

C. TOOLS—Notched spreader blade

D. LAMINATING ADHESIVE—shall be USG

1. PERF-A-TAPE Cement (embedding type).

E. CORNER BEAD—shall be USG (#101 DUR-A-BEAD) (#100 PERF-A-BEAD)

Corner Reinforcement.

IV. ERECTION

A. BASE LAYER

CEILING: ⅜" BAXBORD shall be applied with long edges at right angles to framing members. End joints may occur on or between framing members, and shall be positioned to offset face layer joints by at least 10".

WALLS: ⅜" BAXBORD shall be applied with long edges parallel to and centered on framing members.

NOTE: ½" SHEETROCK or ½" BAXBORD shall be applied perpendicular to ceiling joists spaced 24" O.C.

NAIL ON ATTACHMENT

The base layer shall be nailed to framing members with nails spaced 7" on ceilings and 8" on side walls, the nail heads driven flush with surface of the board.

STAPLE ATTACHMENT

The base layer shall be attached to the framing members with power driven staples—16 U.S. standard gauge galvanized wire, flat, ½" wide, 1" long with divergent points. Spacing shall be the same as specified for nail attachment.

B. FACE LAYER

The face layer shall be ⅜" tapered edge SHEETROCK Gypsum Wallboard of sufficient length, up to 14', to span wall and ceiling areas. All joints shall be loosely butted. All joints on face layer shall fall at least 10" from parallel joints in base layer. After cutting the face layer panels to size, adhesive shall be spread over the laminating surfaces of the wallboards with a notched spreader blade. The notched spreader shall be used in a manner to produce an irregular ribbon pattern of adhesive. Adhesive shall extend up to the ends and edges of all board. The face layer shall be temporarily held in place with either nails of sufficient length to penetrate a minimum of ¾" into the nailing member, or by temporary bracing, shoring, or by means of a double headed nail to which a large fiber or wood washer is applied. Temporary nailing or bracing should provide support every 16" to 24". The adhesive shall be mixed to the consistency recommended by the manufacturer.

When proper bond is developed between the two layers, the temporary nails or bracing shall be removed. When this system is used to attain a 1-hour fire rating, the nails in the face layer shall be spaced 8" o.c., shall remain in place, and be finished the same as for single layer construction.

(#101 DUR-A-BEAD) (#100 PERF-A-BEAD) shall be applied to all external angles.

SHEETROCK WALLBOARD AS A BASE FOR CERAMIC OR OTHER TILE

(Adhesive Application)

I. SCOPE

Gypsum wallboard shall be applied as a base for (ceramic) (metal) (plastic) tile on all areas where tile is to be used as a finished surface unless otherwise indicated.

II. GENERAL CONDITIONS

All materials as specified shall be delivered to the job in original unopened containers or bundles, stored in a place protected from exposure to the elements, from damage by tampering, and used in strict accordance with the manufacturer's directions.

Appropriate blocking, headers or supports shall be provided to support tub, other plumbing fixtures and to receive soap dishes, grab bars, towel racks or similar items as may be required.

III. MATERIALS

1. Gypsum wallboard shall be (⅜") (½") (⅝") Taper Edge SHEETROCK Gypsum Wallboard, 4' wide and in lengths as long as practical to eliminate excessive joints, as manufactured by United States Gypsum Company.
2. Materials for treating joints and concealing nailheads shall be PERF-A-TAPE Joint System as manufactured by United States Gypsum Company.
3. Nails shall be (GWB-54) (4d cooler type) (5d cooler type) (6d cooler type) (1⅜" annular ring type).

4. The surface sealer may be either a waterproof sealer such as varnish or the water resistant adhesive recommended by the manufacturer of the surfacing material spread in a continuous film 1/16" thick over the entire surface of the wallboard; either shall be applied after joints are "treated". Shellac shall not be used. The sealer application shall provide an adequate barrier to the passage of water vapor which may lead to condensation within or on the surface of the backing material or framing members.

5. The adhesive used for application of the surfacing material shall be approved by the manufacturer of the surfacing material for use over gypsum wallboard.

6. The tile installation shall prevent the passage of free water to the backing material.

7. Waterproof receptors, pans or sub-pans shall have an upstanding lip or flange which shall be a minimum of 1" higher than the water dam or threshold contained in the entry way to the shower.

IV. ERECTION

A. FRAMING (see details on page 8)

1. Framing members shall be plumb and true.

2. All framing around tub enclosures and shower stalls shall allow sufficient room so that the inside lip of the tub, prefabricated receptor or hot mopped subpan shall be even with the face of the gypsum wallboard. This may necessitate furring out from the studs the thickness of the SHEETROCK Gypsum Wallboard to be used (⅜", ½", ⅝") less the thickness of the lip, on each wall abutting a tub, receptor or pan.

3. Furring of the proper thickness shall be applied as required parallel to the lip of receptor, pan or tub. The top of furring shall be flush with the upper outside edge of receptor, pan or tub.

4. (a) For walls to be surfaced with ceramic tiles over ¼" thick: When ⅜" SHEETROCK Gypsum Wallboard is to be used on studs spaced 16" o.c. or ½" or ⅝" SHEETROCK Gypsum Wallboard on studs spaced more than 16" o.c., suitable blocking shall be installed between all studs: one row of blocking located approximately 1" above the top of the tub or receptor and another row at the mid point between the tub and ceiling.

   (b) Blocking is not required for ⅜" SHEETROCK Gypsum Wallboard on studs spaced 12" o.c. or less, or for ½" or ⅝" gypsum wallboard on studs spaced 16" o.c. or less.

5. Appropriate blocking, headers or supports shall be provided to support tub, other plumbing fixtures, and to receive soap dishes, grab bars, towel racks and similar items as may be required.

B. APPLICATION

1. Shower pans, receptors or tubs shall be installed prior to the erection of the gypsum wallboard. They shall be properly furred away from the framing members as specified in Section A (Framing), and installed so that the inside surface of the lip or upstanding leg of the receptor or pan shall be in alignment with the surface of the gypsum wallboard.

2. Gypsum Wallboard

   (a) ⅜", ½", ⅝" SHEETROCK Gypsum Wallboard shall be applied horizontally with the factory edge (paper bound) abutting the top edge of a temporary wood strip (or spacing nails) which shall allow a minimum of a ¼" space between the lip of the receptor, tub or subpan and the gypsum wallboard.

   (b) The SHEETROCK shall be nailed in the conventional manner. Exception: Where ceramic tiles over ¼" thick are to be used as a surfacing material, nails shall be spaced 4" o.c. maximum.

   (c) All joints between adjacent pieces of wallboard, including those at all angle intersections, shall be "treated".

3. Application of surfacing material

   (a) Prior to the erection of surfacing materials, a waterproof sealer shall be applied to the entire surface of the gypsum wallboard, treated joints and angles. When the adhesive is used as a sealer, it shall be applied as a separate operation, independent of the application used to adhere the surfacing material. Seal all edges of cut-outs made in the gypsum wallboard for pipes, fixtures, etc.

   (b) Prior to the erection of surfacing materials, all openings around pipes, fixtures, etc., shall be caulked flush with waterproof, non-hardening caulking compound.

   (c) The surfacing material shall then be applied down to the top edge of the shower floor surfacing material, return or tub lip and installed so as to overlap the lip or return of the tub or receptor.

   (d) The surfacing material shall be applied so as to completely cover the following areas:

      (1) over tubs without shower heads—6" above the rim of the tub.

      (2) over tubs where showers occur—a minimum of 5 feet above the rim or 6" above the height of the shower head, whichever is higher.

      (3) shower stalls—a minimum of 6 feet above the shower dam or 6" above the shower head, whichever is higher.

      (4) all jambs in shower stall shall be covered to a like height.

      (5) all areas extending beyond the face of the tub shall be covered a minimum of 4" from the required height to the finished floor of the bathroom (below rim of tub). Areas beyond an exterior corner are excluded.

(e) Where plastic finished wall panels are used as a surfacing material, the following precautions shall be taken:

  (1) Only the type and shape of mouldings recommended by the manufacturer of the surfacing material shall be used. All interior and exterior angles shall be treated with mouldings containing a flange projecting behind the surfacing material on each leg of the angle. Only recommended tub mouldings shall be used at the base where the surfacing materials abut the tub, shower floor or curb. Such mouldings shall be set in caulking compound.

  (2) A bead of caulking compound shall be applied at the angle formed by the gypsum wallboard backing and the moulding used around the top edge of the surfacing material to prevent water entry behind the moulding.

(f) Where other types of surfacing materials are used, the following precautions shall be taken:

  (1) Grout all joints completely and continuously to prevent water penetration.

  (2) Nonsetting caulking compound shall be applied between the wall surfacing materials and the shower floor surfacing or tub rim.

  (3) The angle between the tub edge and the surfacing material shall likewise be caulked.

SHEETROCK WALLBOARD TRUSSTEEL STUD PARTITION SYSTEM

(NOTE: To Architect: For treated joints refer to specifications covering PERF-A-TAPE Joint System, Page 16.)

(NOTE: To Architect: Stud attachment shoes may be eliminated where fire rating is not required and/or ceiling height-variation permits use of studs pre-cut to length.)

I. SCOPE

Furnish all labor, materials and equipment to erect all interior non-bearing partitions and surface with gypsum wallboard in accordance with specifications and drawings.

II. GENERAL CONDITIONS

In cold weather the building shall be heated during the lamination of the gypsum wallboard face layer and joint treatment to maintain a uniform temperature in the range of 45°F. to 70°F., and ventilation shall be provided to eliminate excessive moisture.

All materials as specified above shall be delivered to the job in original unopened containers or bundles, stored in a place protected from exposure to the elements and from damage by tampering, and used in strict accordance with manufacturer's directions.

III. MATERIALS

A. STUDS—(1⅝") (2½") (3¼") (4") (6") shall be TRUSSTEEL Studs as manufactured by the United States Gypsum Company.

B. METAL FLOOR AND CEILING RUNNERS—shall be TRUSSTEEL Stud Snap-In Runner Track for 1⅝", 2½", 3¼" and 4" Studs, for 6" stud width, metal runner shall be TRUSSTEEL Stud Standard Runner Track as manufactured by the United States Gypsum Company.

C. WOOD FLOOR AND CEILING RUNNERS shall be specified in details.

D. STUD ATTACHMENT SHOES—shall be TRUSSTEEL Stud attachment shoes as manufactured by the United States Gypsum Company.

E. POINTED TRUSSTEEL Stud Attachment Shoes, as manufactured by the United States Gypsum Company, shall be used with wood runners.

F. BASEBOARD—shall be ⅜" BAXBORD Gypsum Backing Board as manufactured by the United States Gypsum Company.

G. FACE LAYER—shall be (⅜" tapered edge SHEETROCK Gypsum Wallboard) (⅜" Panel SHEETROCK Gypsum Wallboard—maximum length 10') as manufactured by the United States Gypsum Company.

H. ATTACHMENT CLIPS—shall be TRUS-LOK TL-1 field Clips, TL-Drive-in Starter clips as supplied by the United States Gypsum Company.

I. END JOINT CLIPS—shall be BRIDJOINT B-1 Clips as supplied by the United States Gypsum Company.

J. ADHESIVE—shall be (PERF-A-TAPE Cement—embedding type or ready mixed) as manufactured by the United States Gypsum Company or as may otherwise be recommended by United States Gypsum Company.

K. EXTERIOR CORNER REINFORCEMENT—shall be (#100 PERF-A-BEAD) (#101 DUR-A-BEAD) Corner Reinforcement as manufactured by the United States Gypsum Company.

IV. ERECTION

Snap-In Metal Runner Track shall be aligned accurately and securely anchored with suitable fasteners (power-driven stud anchors or equivalent) spaced not more than 24" on centers.

Studs shall be spaced (16") (24") o.c. (each stud shall be snapped-in place vertically in notches provided in Snap-In Runner Track at top and bottom.) (Each stud shall be snapped-in place vertically in notches provided in Snap-In Runner Track, and each stud secured to runner track by two attachment shoes at top only.) (Each attachment shoe shall be crimped twice to engage the flanges of studs.) Studs shall be located approximately 2" from all door frame jambs, abutting partitions, or other construction. Studs supporting steel door frames shall be secured to ceiling runner track with stud shoes. With steel door frames, an additional anchorage stud shall be required at each jamb. Anchor studs adjacent to door frame to the jamb anchors as per details. All corners shall be framed with one stud approximately 2" from the external corner and one stud approximately 2" from the internal angle of each of the meeting partitions.

Base Layer—BAXBORD shall be applied starting at the floor level and working upwards with the long (8') dimension parallel to the floor. The BAXBORD shall be held in place with TL-Drive-In Starter clips at the floor and ceiling runners spaced at approximately every 24". TL-1 Clips shall be positioned at each intersection of the edge of the BAXBORD and stud cord.

BAXBORD end joints shall occur between studs, staggered in adjacent courses and held in alignment at the end and edge intersections with B-1 clips.

Face Layer—The facing units shall be cut to full floor to ceiling height lengths less ¼". Full width boards shall be used wherever possible. Boards with broken or damaged edges shall not be used.

Adhesive shall be mixed in accordance with the manufacturer's directions and shall be applied to the back of the facing unit in ribbons of cement spaced 7" to 8" apart and approximately 1½" to 2" from each edge, end and cut-out edges for partition openings. The ribbons of cement shall be approximately ½" wide at the base and ⅝" high.

Immediately after applying the cement, boards shall be placed vertically against the BAXBORD base layer and temporarily held in position by sufficient nails, bracing, or staples (power driven, 16 U.S. Standard gauge galvanized wire, flat, ½" wide, ¾" long with divergent points) until the adhesive bonds the two units securely together. Succeeding units shall be likewise positioned with vertical edges abutting and surface flush with the ones previously erected. As required, TL-DRIVE-IN STARTER clips shall be used at the ceiling line to temporarily hold the face layer in place until properly adhered.

Specifications covering the use of wood floor and ceiling runners are essentially the same as above surfaces except:

A. Pointed TRUSSTEEL Stud shoe clips are used and shall be secured to the wood floor or ceiling runners by driving the points into the wood.

B. The TL-DRIVE-IN STARTER clip is not required. BAXBORD shall be secured in position by nailing through the BAXBORD into the wood floor and ceiling runners. The facing unit may be held in position by nails driven through both the facing unit and BAXBORD backing board, and into the wood ceiling runner.

ARCHITECT SPECIFICATIONS FOR PERF-A-TAPE JOINT SYSTEM PRODUCTS

I. SCOPE

Unless otherwise indicated, all walls, partitions and ceilings are included. Furnish all labor and material necessary to reinforce and conceal all joints between gypsum wallboard panels in accordance with specifications and drawings. (If DUR-A-BEAD metal corner reinforcing is specified) furnish all labor and material necessary to properly conceal the metal flanges of DUR-A-BEAD. (If PERF-A-BEAD corner reinforcing is to be specified) furnish all labor, PERF-A-BEAD Corner reinforcement and cement required to finish all external vertical corners and other corners as may be shown on drawings.

(If PERF-A-TRIM is specified) Furnish all labor and material to properly bond and conceal exposed flanges of PERF-A-TRIM as specified or shown on drawings.

II. GENERAL CONDITIONS

Heat and Ventilation—In cold weather the building shall be heated well in advance of and during the application of the gypsum wallboard, to maintain a uniform temperature in the range of 55° F. to 70° F., and ventilation shall be provided to eliminate excessive moisture. When required, heat is to be furnished by (Insert Contractor's Name Here) Drafts are to be avoided during application but adequate ventilation is to be provided when application is completed. In glazed buildings this shall be accomplished by keeping windows open approximately two inches top and bottom (or side pivoted windows approximately four inches) to provide air circulation. In enclosed areas or buildings lacking in natural ventilation, temporary circulators shall be used.

MATERIALS

General: All materials as specified above shall be the products of the United States Gypsum Company, delivered to the job in original unopened containers, stored in a place protected from exposure to the elements and from damage by tampering, and used in strict accordance with manufacturer's directions.

Reinforcing Tape:

PERF-A-TAPE

Cement:

PERF-A-TAPE Joint Cement (or all purpose ready mixed)—for embedding. PERF-A-TAPE Topping (or all purpose ready mixed)—for fill and finishing. (If PERF-A-BEAD is to be used, specify as follows) PERF-A-BEAD Corner Reinforcing.

APPLICATION

PERF-A-TAPE Cement and PERF-A-TAPE Topping shall be mixed in accordance with manufacturer's recommendations. (All Purpose Ready Mixed PERF-A-TAPE Cement shall be used as it comes in original container.)

Using a suitable tool or machine, a thin uniform layer of PERF-A-TAPE Cement (embedding type or ready mixed), approximately 3" wide, shall be applied over the joint to be reinforced. The tape shall then be centered over the joint and seated into the cement, leaving sufficient cement adhesive under the tape to provide proper bond.

Wall and ceiling angles and inside vertical corner angles shall be similarly reinforced with the reinforcing tape folded to conform to the adjoining surfaces and to form a straight, true angle.

All joints shall be allowed to dry thoroughly (minimum of 24 hours) between each application of cement.

The tape shall be covered with topping (or ready mixed cement), spread evenly over and slightly beyond the tapered edge area of the board and feathered at the edges. After the previous coat is dry it shall be covered with a second coat of topping (or ready mixed cement) with a smooth uniform slight crown over the joint and the edge feathered slightly beyond the preceding coat. All dimples at nail heads shall receive three coats of joint cement, or topping, (or all purpose ready mixed cement), applied as each coat is applied to the joints.

(If DUR-A-BEAD Corner reinforcing is used). Flanges of all DUR-A-BEAD metal corner reinforcing shall be concealed by at least two coats of cement. The first coat shall be PERF-A-TAPE Cement (embedding type or ready mixed cement). Second coat may be either PERF-A-TAPE Cement or PERF-A-TAPE topping (or all purpose ready mixed cement). When completed, the cement shall extend approximately 8" to 10" on either side of the exposed metal nosing.

(If PERF-A-BEAD corner reinforcing is used.) PERF-A-BEAD shall be furnished, applied and concealed in accordance with the manufacturer's directions.

(If PERF-A-TRIM is used). PERF-A-TRIM shall be finished in accordance with the manufacturer's directions.

All coats shall be sanded as necessary after each application of joint cement or topping (or ready mixed cement) has dried. The final coat and subsequent sanding shall leave all gypsum wallboard and treated areas uniformly smooth and ready to receive decoration.

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(NEWARK)
DALLAS, TEXAS
DENVER, COLO.
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LOUISVILLE, KY.
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MILWAUKEE, WISC.
MINNEAPOLIS, MINN.
NEW ORLEANS, LA.
NEW YORK, N.Y.
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RICHMOND, VA.
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SALT LAKE CITY, UTAH
SAN ANTONIO, TEXAS
SAN DIEGO, CALIF.
SAN FRANCISCO, CALIF.
SEATTLE, WASH.
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A.I.A. File 23-L
37-B
37-C

TECHNICAL INFORMATION

USG® INSULATIONS AND HARDBOARD

UNITED STATES GYPSUM

1960

A.I.A. File 23-L
37-B
37-C

INSULATION AND HARDBOARD

Beauty, durability and economy are featured in the various insulation products manufactured for the building industry by United States Gypsum Company. However, *function* is the one characteristic common to *all* U.S.G. Insulation Board, Hardboard and Insulation Wool products.

Within U.S. Gypsum, function of product is always in terms of the customer's needs and the building industry's demands. For the architect, function is interpreted in terms of appropriateness to building design, both in structure and esthetics. Function for the builder, means ease of handling and application within accepted building techniques and with available or easily procured equipment. For the property owner, product function must mean a better home, office, factory or warehouse over a greater period of time with a minimum of maintenance and the lowest practicable operating costs commensurate with personal comfort.

Since architect, builder, contractor and the building materials manufacturer all work for the satisfaction of the property owner, *this* is the function U.S.G. Insulation and Hardboard Products seek to serve best.

Traditionally, any insulation material has paid for itself in terms of reduced costs of building operation and increased personnel comfort. But through research, engineering product development, and market knowledge based on more than thirty years of experience gained in serving the building industry, U.S.G. has developed plus values in insulation products and hardboard to give greater meaning to *function* for the architect and contractor, as well as the property owner.

Typical of these plus values are the U.S.G. developments in ceiling tile. Here function has been increased through TWIN-TILE—and now sound controlling ceilings can be installed twice as fast with large 12" x 24" tiles instead of the traditional 12" x 12" pieces. Ceiling beauty has also been enhanced through USG Fashion Tiles, pre-decorated with printed patterns which provide color and design while minimizing acoustical treatment and joints.

Throughout this booklet are further examples of the knowledgeable leadership of United States Gypsum in Insulation Boards, Hardboards and Insulation Wool.

TECHNICAL ASSISTANCE

Keeping pace with the development of product, U.S.G. has maintained and expanded its services to the building industry. Offices in all major cities, staffed with trained sales engineers are prepared to provide information and assistance. Supplementing these representatives, the U.S.G. Architect Service Department is available to assist the architect and engineer.

AVAILABILITY

Multi-plant manufacturing facilities permit U.S.G. to provide maximum service on insulation or hardboard products throughout the country. Insulation board and hardboard mills are located on the east coast, the west coast and in the central south. These three strategic locations provide maximum service not only to the major markets but all sections of the country. U.S.G. Insulating Wool is manufactured at seven plants located on major transportation lines and near the nation's principal markets.

INSULATING WOOL

DESCRIPTION (Mineral Fiber)	Type	Meets Federal Spec's.
RED TOP* Insulating Wool	Asphalted Vapor Barrier Paper Enclosed Blanket	HH-I-521 C Type-1 Class C
	Open Face Blanket	HH-I-521 C Type-1 Class-B
	Aluminum Foil Two Sides Enclosed Blanket	HH-I-521 C Type-1 Class-C
	Aluminum Foil One Side Enclosed Blanket	HH-I-521 C Type-1 Class-C
	Nodulated or Nodular	HH-I-521 C Type-3
Perimeter Insulation	Semi-Rigid (Mineral Wool)	FHA Speck. MPR #54 and MPS FHA #300

STRUCTURAL INSULATION

DESCRIPTION	TYPE	Conductance	
		k	c
Roof Insulation	Wood Fiber (Rigid)	0.36	0.72 0.36 0.24 0.19 0.15 0.12
Insulating Roof Deck (Regular)			0.24 0.18 0.12
Insulating Roof Deck (Vapor Seal)			..... 0.18 0.12
Insulating Sheathing		0.36	
Shingle Backer			
Insulating Bldg. Board		0.36	
DUPLEX* Wallboard		0.36	

DECORATIVE INSULATION

DESCRIPTION Wood Fiber Products	Finish				
	Bone White	Copper-tint	Pewter Gray	Hilite	BLENDTEX
Regular QUIETONE* Acoustical Tiles	X X X X				
Fashion QUIETONE Acoustical Tile		X X	X X X X		
Insulating Twin-Tile				X X	
Fashion Insulating Twin-Tile		X	X		
Insulating Panel Tile				X X	
Decor. Insul. Plank				*X	*X
Custom Twin Tile	X X				
Custom Panel Tile	X X				

DURON HARDBOARD PRODUCTS

DESCRIPTION Wood Fiber Products	Type	Meets Federal Spec's.
Hardboard	Regular or Treated	LLL-H-35
Perforated Hardboard	Regular Regular Treated Treated Treated Heavy Duty Heavy Duty	
Hardboard Tile	Treated	LLL-H-35
Underlayment	Regular	LLL-H-35
STRUCTOBOARD*	Regular—Semi-hard	LLL-H-35

"USG", "BLENDTEX", "RED TOP", "DUPLEX", "QUIETONE", "DURON", "STRUCTOBOARD", "TEXOLITE", "SHEETROCK", "FIRECODE", "BAXBORD", mentioned in this publication are registered trademarks owned by United States Gypsum Company and are used by it to distinguish its products. "USG" identifies the particular fiber insulation board; "BLENDTEX" identifies the particular insulation tile and plank; "RED TOP" identifies the particular mineral wool; "DUPLEX" identifies the particular fiber wallboard; "QUIETONE" identifies the particular wood fiber acoustical tile; "DURON and STRUCTOBOARD" identifies the particular hardboard manufactured only by United States Gypsum Co.; "TEXOLITE" identifies the particular casein flat paint manufactured only by the United States Gypsum Co.; "SHEETROCK", "FIRECODE", "BAXBORD" identifies the particular gypsum wallboard.

Approx. Thickness	Conductance k	Conductance c	Resistance 1/k	Resistance 1/c	Framing Spacing	Length	Approx. Wt.lbs.PerSq.Ft	Style	DESCRIPTION (Mineral Fiber)	Gen. Desc. (page)	Specification (page)
Economy 1½"	0.27	0.180	3.70	5.55	16", 20", or 24" o.c.	96"	0.30	Preformed Blanket	Asphalted Paper Enclosed	4	10
Medium 2"	0.27	0.135	3.70	7.40		24", 48", 96"	0.38				
Thick 3"	0.27	0.090	3.70	11.10			0.60				
Super Thick 6"	0.27	0.945	3.70	22.20	16"	48"	1.20	Preformed Blanket	Open Face Blanket	4	10
Medium 2"	0.27				16" or 24" o.c.	48", 96"	0.38	Preformed Blanket	Aluminum Foil Enclosed Blanket	4	10
Thick 3"	0.27						0.60				
Medium 2"					16" or 24" o.c.	48", 96"	0.38	Preformed Blanket	Enclosed Blanket—Aluminum Foil Vapor Barrier or Foil Breather	4	10
Thick 3"							0.60				
2"	0.27	0.135	3.70	7.40	(Non pre-formed dimension)		0.67	Nodulated—Pouring Wool (1)	Nodulated or Nodular	4	10
4"	0.27	0.067	3.70	14.80			1.33	Nodular —Blowing Wools (1)			
6"	0.27	0.445	3.70	22.20			2.00				
¾"	0.24	0.32	4.17	3.13	12", 18" or 24"	48"	0.45		Perimeter Insulation	5	10
1"	0.24	0.24	4.17	4.17			0.59				
1½"	0.24	0.16	4.17	6.25			0.89				
2"	0.24	0.12	4.17	8.33			1.87				

U Value	Meets Federal Spec's.	Thickness	Width	Length	Edge	Approx. wt. lbs. Per M Sq. Ft.	Framing Spacing	Light Reflection	Finish	DESCRIPTION	Gen. Desc. (page)	Specification (page)
	LLL-F-321 b-Class-C	½"	24"	48"	Square	725			Asphalt Impregnated, Asphalt Coated or plain	Roof Insulation	5	10
		1"				1,550						
		1½"				2,250						
		2"				3,000						
		2½"				3,750						
		3"				4,500						
0.18	Basic Mat LLL-F-321-b Class-E & D	1½"	24"	8'-0"	Beveled—Tongue & Groove—Long edges	2,320	24"	79%	Hilite (white)	Insulating Roof Deck (Regular)	4	10
0.15		2"				3,060	32"					
0.10		3"				4,490	48"					
....	Basic Mat LLL-F-321 b Class-E & D		24"	8'-0"	Beveled—Tongue & Grove—Long edges			79%	Hilite (white)	Insulating Roof Deck (Vapor Seal)	4	10
0.15		2"				3,095	32"					
0.10		3"				4,525	48"					
	LLL-F-321 b Class-E Com. Std.-42-49	25/32"	24"	8'-0"	T & G--Long edges	1,300	12", 16" for ½ or 24" for 25/32"		Asphalt Coated or Asphalt Impregnated	Insulating Sheathing	6	11
		½"	24"	8'-0"	V-edge Long edges	860						
		25/32"	48"	8' or 9'	Square	1,300						
		½"	48"	8' or 9'	Square	860						
		⅜"	11¼" 13½" 15" 15½"	48"	Square	600	12" or 16"		Asphalt Impregnated or Asphalt Coated	Shingle Backer	6	11
	LLL-F-321 b Class-A	½"	4'	8', 10" or 12'	Square	750	12" or 16"	75%	Hilite (white)	Insulating Building Board	7	
		⅜"	4'	8' or 10'	Square	600	12" or 16"	75%	Hilite (white)	DUPLEX Wallboard	7	

Surface: Overprint Random Line	Surface: Overprint Rib Line	Surface: Perforations Regular	Surface: Perforations Random	Surface: Slotted	Surface: Solid	Edges	Meets Federal Spec's.	Conductance (k)	Conductance (c)	Thickness	Size Width	Length	Approx. Wt. lbs. per M Sq. Ft.	DESCRIPTION Wood Fiber Products	General Description (page)	Specification (page)
		X	X	X		Kwik-lok	SS-A-118 b Class D & C			½"	12"	24" (1)	950	Regular QUIETONE Acoustical Tiles	8–9	11-12
		X	X			Kwik-lok				¾"	12"	24" (1)	1,100			
		X	X	X		Butt Bevel				½"	12"	12" (2)	950			
		X	X			Butt Bevel				¾"	12"	12" (2)	1,100			
X			X			Butt Bevel	SS-A-118-b Class-D			½"	12"	12" (1)	950	Fashion QUIETONE Acoustical Tiles	8–9	11-12
X			X			Kwik-lok				½"	12"	24" (1)				
X	X			X		Butt Bevel				½"	12"	12" (1)				
X	X			X		Kwik-lok				½"	12"	24" (1)				
					X	Kwik-lok	LLL-F-321-b Class-D	0.36	0.72	½"	12"	24" (1)	950	Insulating Twin-Tile	8–9	11-12
					X	Kwik-lok		0.36	0.72	½"	16"	32" (1)	950			
X					X	Kwik-lok	LLL-F-321-b Class-D	0.36	0.72	½"	12"	24" (1)	950	Fashion Insulating Twin-Tile	8–9	11-12
					X	Kwik-lok	LLL-F-321-b Class-D	0.36	0.72	½"	12"	24"	950	Insulating Panel Tile	8–9	11-12
					X	Kwik-lok		0.36	0.72	½"	16"	32"	950			
					X	Kwik-lok, long edge	LLL-F-321-b Class-D	0.36	0.72	½"	8",12", 16"	8' & 10'	950	Decor. Insul. Plank	8–9	11-12
					X	Kwik-lok	LLL-F-321-b Class-D	0.36	0.72	½"	12"	24" (1)	950	Custom Tile	8–9	11-12
					X						16"	32" (1)				
					X	Kwik-lok	LLL-F-321-b Class-D	0.36	0.72	½"	12"	24"	950	Custom Panel Tile	8–9	11-12
					X						16"	32"				

*Not available in some areas.

Smooth Surface (sides)	Finish	Perforated (Hole Dia. 1" c-to-c)	Solid	Edge	Typical-Minimum Modulus of Rupture psi Regular	Typical-Minimum Modulus of Rupture psi Treated	Thickness	Width	Lengths	Approx. Wt. lbs. per M Sq. Ft. Regular	Approx. Wt. lbs. per M Sq. Ft. Treated	DESCRIPTION Wood Fiber Products	General Description (page)	Specification (page)
2	Natural (Brown)		X	Square	7,000	9,000	⅛"	2'	4'	750	825	Hardboard	7	
					6,000	7,500	3/16"	3'	4'	975	1,050			
					6,000	7,500	¼"	4'	4', 6', 8', 9', 10' or 12'	1,225	1,300			
2		X		Square			⅛"	2'	3', 4', 6', 8'	725	800	Perforated Hardboard	7	
							⅛"	4'	3', 4', 6', 8'					
							⅛"	2'	3', 4', 6', 8'					
							⅛"	4'	3', 4', 6', 8'					
							¼"	4'	6', 8'		1,273			
							¼"	2'	4', 6', 8'		1,000			
							¼"	4'	4', 6', 8'		1,000			
1			Bev. Cut	Square			⅛"	4'	8' or 12'		800	Hardboard Tile	7	
2			X	Square	3,000		¼"	4'	8' or 12'	975		Under layment	7	11
2			X	Square	3,000		¼"	4'	8' or 12'	975		STRUCTOBOARD*	7	

*T. M. Reg. U. S. Pat. Off.

INSULATING WOOL AND STRUCTURAL INSULATIONS

RED TOP* INSULATING WOOL

DESCRIPTION

RED TOP Insulating Wool consists of spun mineral fibers mechanically formed either into a uniform mat of definite dimensions and controlled density or into a uniform pellet form suitable for pouring or blowing into framing spaces.

RED TOP Insulating Wool Blankets—Are enclosed, except for mill cut ends. Face of enclosure is glossy asphalted paper, an effective vapor barrier, extending beyond the edges of the blanket to form nailing flanges. These flanges are wide enough that the edges are overlapped when applied to studs, thus forming a continuous vapor barrier. A strong, yet porous, flameproofed paper on the back, completes the enclosure. See pages 2 and 3 for sizes.

RED TOP Reflective Insulating Wool Blankets are enclosed on two sides with genuine aluminum foil. The face of the batt is a solid surface of aluminum foil giving one of the most effective known vapor-barrier surfaces. The top surface is perforated to allow the breathing of the mineral wool fibers and minimize vapor traps in walls and ceilings. The reflective surfaces give the added factor of reflecting up to 95% of radiant heat.

RED TOP REFLECTIVE INSULATING WOOL BLANKETS FOIL ONE SIDE ONLY—Are enclosed blankets with genuine aluminum foil on one side. (one reflective surface) Blankets are available with either foil vapor barrier and regular breather paper for side wall installations or with regular vapor barrier and perforated foil breather for ceiling installations.

USG NODULAR WOOL—Consists of Mineral Wool fibers formed into noduals for installation by pneumatic machine.

USG Pouring Wool—Consists of mineral fibers formed into pellets for pouring and spreading by hand. Wool is packaged in light weight bag for easy handling.

RED TOP Nodulated Wool—Consists of mineral fibers formed into pellets for either pouring and spreading by hand or for the installation by pneumatic methods.

FUNCTION AND UTILITY

High Thermal Resistance—Conductance is 0.27 per inch thickness and Resistance 3.70 per inch thickness. See table on pages 2 and 3 for Resistance for given thicknesses.

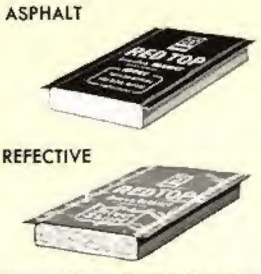
Noncombustible—The mineral fibers will not burn or support combustion.

Resistance to Vapor Transmission—The aluminum foil surface or the asphalted paper resists the passage of water vapor and protects against condensation. It has a vapor permeability factor of 1.00 perm†, which is within the limits of permeability recommended by many recognized authorities for normal building occupancy.

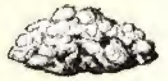
Uniform Effectiveness—Manufactured to closely controlled tolerance for density and dimension, for uniform insulation.

Stability—Highly resilient. Resists settling. The mineral fibers are resistant to decay, corrosion, moisture and all other forms of deterioration.

Resistant to Vermin—The mineral fibers offer no sustenance to vermin or rodent life.



INSULATING WOOL BLANKETS



POURING OR BLOWING WOOL

Light Weight—see table.

Resilient—Spun mineral fibers are strong and resilient. Blanket spring back to full thickness when removed from package.

Moisture Resistant—Mineral wool fibers do not absorb moisture. If the insulation becomes wet, it will dry quickly as soon as the source of moisture is removed. Wool's original insulating efficiency will be restored when fibers are dry.

FEDERAL SPECIFICATIONS

RED TOP Insulating Wools comply with Federal Specification HH-I-521C.

LIMITATIONS OF USE

1. Masonry Walls—It is strongly recommended that at least a 1" air space be provided between insulation and exterior masonry. Suitable weep holes are recommended. If RED TOP Wool is placed in direct contact with exterior masonry walls, the masonry **must be watertight** to prevent the insulation from becoming wet. The insulation is less effective and may transmit moisture to interior finishes if it becomes wet by direct contact with leaking exterior masonry.

Suspended Ceilings and Floors Over Unexcavated Areas—Suspended ceiling may be insulated by blankets installed with the vapor barrier down. Blankets installed in floors over unexcavated areas should be provided with additional support and adequate ventilation to insure a permanently effective installation.

If preferred, Nodulated Wool may be used for suspended ceilings and installed by a wool blowing machine.

Importance of Attic Ventilation Natural ventilation through at least two fixed vents or louvers should be provided in unfinished attics or closed-off spaces between the insulation and roof, both to reduce moisture in those spaces during winter, and to vent heated air in summer. In every installation, vents should be located to insure complete ventilation of the space under consideration. Refer to Sweet's Light Construction file, section 3d/Uni, for complete details on ventilation.

USG* INSULATING ROOF DECK

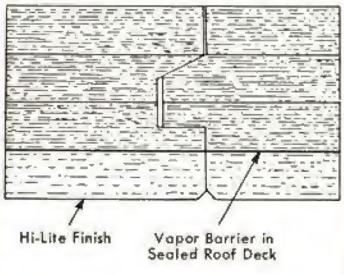
DESCRIPTION

Consists of ½" layers of USG wood-fiber Insulation Board, laminated with a moisture-resistant adhesive into a strong, rigid, lightweight unit. Provides excellent year-round insulation, helps reduce noise reverberation. Ceiling side has highly light-reflective Hi-Lite (Ivory) finish, requires no further decoration when deck is laid over exposed beams. Sides: tongue and groove. Ends: square. Size: 2' x 8'. Available in two types: USG Regular Insulating Roof Deck for use in warm climates. Thickness—1½", 2", and 3" USG Vapor Sealed Insulating Roof Deck which is to be used in cold climates. Thickness—2" and 3".

FUNCTION AND UTILITY

Covered with a good built-up roof assembly, this deck provides excellent protection for flat, pitched or mono-slope roofs in residential construction.

USG Sealco Asphalt Shingles or other suitable asphalt shingles may be applied to 2" and 3" thick insulating roof deck on roofs with slopes greater than 4" in 12". Application shall be in accordance with the manufacturer's recommendations.



Builds

Decorates

LIMITATIONS OF USE

USG Regular Insulating Roof Deck is to be used only where the average January isotherm is above 40°F.

USG Sealed Insulating Roof Deck—for cold climates, where the average January isotherm is below 40°F., and where such lower temperatures may be encountered for extended periods.

*T.M. Reg. U.S. Pat. Off.

USG* PERIMETER INSULATION

USG Perimeter Insulation consists of inorganic spun mineral wool fibers mechanically formed and compressed into a uniform semi-ridged board of definite dimensions and controlled density. Applied along the perimeter of slabs or to the inside of foundation walls, USG Perimeter Insulation effectively prevents heat loss through concrete floors and walls of crawl spaces used as heating plenums. Results: warm floors and significant savings in fuel costs.

FUNCTION AND UTILITY

High Thermal Resistance—conductance K Factor is 0.24 per inch thickness (Btu/in/hr sq ft. °F at 75°F, Mean Temp) and Resistance 4.17 per inch thickness. See pages 2 and 3 for C Factors for given thickness.

Permanent—Because of it is inorganic mineral wool it will not deteriorate, is resistant to vermin and will not provide sustance for fungi or termites.

Non Capillary—Inorganic fibers will not wick moisture from damp or wet areas.

Resists Compression—Dense semi ridge board resists compression under the pressure of concrete slab.

Economical—Low in cost: no maintenance required.

Full Range of Thicknesses—USG Perimeter Insulation is available in ¾", 1", 1½" and 2" thicknesses to meet all insulation requirements.

FHA SPECIFICATIONS

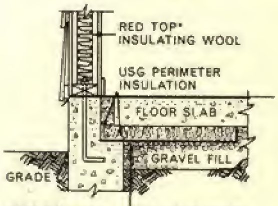
USG Perimeter Insulations comply with FHA Specifications MPR #54 and MPS FHA No. 300 dated 11-1-58.

LIMITATIONS OF USE

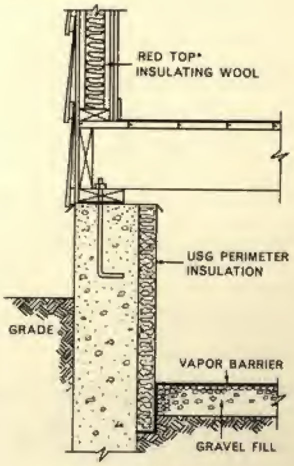
Perimeter Insulation should not be used below the normal water table.

USG PERIMETER INSULATION

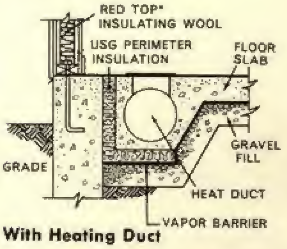
Application Details—No Scale



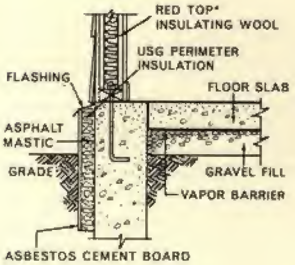
"L" Shape



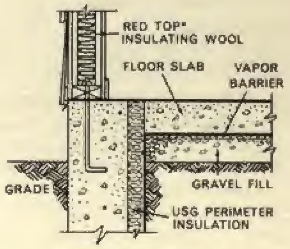
Crawl Space



With Heating Duct



Existing Construction



Vertical Application

USG ROOF INSULATION

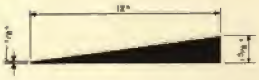
An insulation board product, when laid over wood, concrete, gypsum or steel decks, not only provides comfort for the areas below, but acts as a foundation for the built-up roof covering. The individual fibers of USG Roof Insulation are chemically treated to make them moisture resistant. USG Roof Insulation is supplied in 24" x 48" size with square edges. Thickness—½", 1", 1½", 2", 2½", and 3".

FUNCTION AND UTILITY

When covered with a good built-up roof assembly, this product provides an excellent insulation and base for flat or slightly pitched roofs commonly used in commercial construction.

It is available in three types i.e. plain, asphalt impregnated and asphalt coated and in six thermal conductances, namely, 0.72, 0.36, 0.24, 0.19, 0.15, and 0.12. To meet varied insulation requirements, USG Roof Insulation meets or exceeds all requirements of Federal Specification LLL-F-321b-Class C.

U.S.G. TAPERED EDGE STRIP
SIZE: 12" x 48"



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*T. M. Reg. U. S. Pat. Off.

USG* Insulating Sheathing

An insulating exterior wall sheathing integrally treated to make it moisture resistant. USG Insulating Sheathing is treated two ways—asphalt coated and asphalt impregnated. The 25/32″ x 2′ x 8′ size has a tongue-and-grooved joint on the long edges. The ½″ x 2′ x 8′ size has a V-joint on the long edges. Other sizes, 4′ wide by 8′ or 9′ long, have square edges and are either 25/32″ thick or ½″ thick.

FUNCTION AND UTILITY

This excellent insulating sheathing has many uses. Most commonly designed to sheath the exterior of frame walls and is covered with wood siding, brick veneer, wood or asbestos shingles or stucco.

Strength. A wall sheathed with 25/32″ USG insulating sheathing possesses greater bracing and stiffening strength than a wall sheathed horizontally with conventional narrow sheathing units. Tests conducted at the Forest Products Laboratory, Madison, Wisconsin, indicate that a wall sheathed with 25/32″ structural insulating board sheathing, has a rigidity factor of 3.0 compared to a factor of 1.0 for horizontal wood sheathing. USG 25/32″ sheathing meets the structural requirements established in F.H.A. Technical Circular No. 12, covering the use of 4 foot wide insulating sheathing without diagonal bracing.

Insulating Value. The "k" value of USG Insulation is approximately 0.36 and its resistivity compares with 38″ of stone concrete.

Tensile Strength. USG Structural Insulating products exceed all requirements set up by Federal Specification LLL-F-321b, and Commercial Standard 42-49.

Light Weight. The 25/32″ thickness weighs approximately 1200 pounds per M square feet. The ½″ thickness weighs approximately 800 pounds per M square feet.

Wind-Tight. USG Insulating Sheathing, 25/32″ x 2′ x 8′, is provided with a fitted tongue-and-groove joint on longitudinal edges and ends are joined over supports, thus making windtight joints. The use of building paper is unnecessary and not recommended.

Costs. The material cost is low, and waste from these large units is negligible. Approximately 1200 square feet is erected per man per day.

NAILING OR STAPLING

Secure sheathing to the studs with either nails or power-driven staples in accordance with the following tables:

NAILING (With Let-in Corner Bracing)

Thickness of Sheathing	Maximum Stud Spacing	Minimum Length of Roofing Nail	Diameter of Nail Head	Spacing on Studs	
				Edges of Sheet	Intermediate Studs
½ in.	16″ o.c.	1¾″	3/8 in.	4 in.	8″ o.c.
25/32 in.	*24″ o.c.	2″	3/8 in.	*4 in.	*8″ o.c.

Note: Where let-in corner bracing is omitted, the maximum stud spacing is 16″ o.c. and the nail spacing 3″ and 6″ o.c. respectively.

STAPLING (With Let-in Corner Bracing)

Thickness of Sheathing	Maximum Stud Spacing	Gauge of Staple	Minimum Crown of Staple	Minimum Length of Staple	Spacing on Studs	
					Edges of Sheet	Intermediate Studs
½ in.	16″ o.c.	16	7/16 in.	1⅛ in.	4 in.	6 in.
½ in.	16″ o.c.	14	7/16 in.	1⅛ in.	4 in.	8 in.
25/32 in.	24″ o.c.	16	7/16 in.	1½ in.	4 in.	6 in.
25/32 in.	24″ o.c.	14	7/16 in.	1½ in.	4 in.	8 in.
(Without Let-in Bracing)						
25/32 in.	16″ o.c.	16	7/16 in.	1½ in.	3 in.	6 in.
25/32 in.	16″ o.c.	14	7/16 in.	1½ in.	4 in.	8 in.

Note: For ½″ thickness for use without corner bracing inquire about USG Super Strength Sheathing.

USG SHINGLE-BACKER

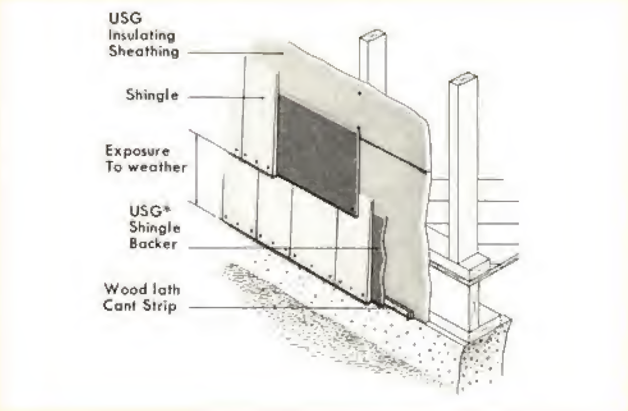
DESCRIPTION

USG Shingle-Backer is used as an insulated undercourse for wood shingle siding. It eliminates the use of wood shingles for such undercourses.

FUNCTION AND UTILITY

USG Shingle-Backer may be used over USG Insulating Sheathing or Wood Sheathing. When used in conjunction with 25/32″ USG* Insulating Sheathing on conventional construction, the U-factor of the wall is .17 Btu. This reflects a savings of over 40% in heat loss as compared to an uninsulated wall.

USG Shingle-Backer is available in 4 foot long panels and four widths. 11¾″ wide Shingle-Backer is used for 12″ asbestos-cement shingles having a 10½″ exposure to the weather. 13½″ Shingle-Backer is used for 16″ wood shingles exposed up to 12″ to the weather. 15½″ Shingle-Backer should be used for 18″ wood shingles exposed from 12″ to 14″ to the weather. 16″ wood shingles for 13½″ exposure with 15″ Shingle-Backer.



*T.M. Reg. U. S. Pat. Off.

USG INSULATING BUILDING BOARD

DESCRIPTION

USG Insulating Building Board is a highly efficient, lightweight, rigid, square-edged, wood-fiber insulating board. Manufactured ½" thick, 4' wide and 8', 10', 12' long, with an attractive Hi-Lite stipple-texture surface finish.

FUNCTION AND UTILITY

USG Insulating Building Board provides excellent thermal insulation for walls, ceilings and floors in all types of light construction—prefabricated buildings, attic walls and ceilings, recreation rooms, basement and storage rooms, garage lining, summer cottages, etc. In addition to its high insulating value ("k—0.36) its structural qualities add bracing strength and rigidity to the framing.

The Hi-Lite, plastic-coated stipple texture provides an attractive predecorated surface that may be cleaned with wallpaper cleaner—or redecorated with any standard paint (Texolite* paints are recommended). USG Insulating Building Board is readily cut or shaped to fit with ordinary tools. The large sheets are easily and quickly erected, lending further economy to its use.

LIMITATIONS OF USE

1. Supports must be spaced not to exceed 16".
2. It should not be subjected to extremely high moisture conditions.
3. When used in poultry houses, it should be protected by applying one of the following materials over its surface: Hardboard, Asbestos, fine wire screening, etc. This should only be done in areas accessible to the chickens or other poultry.

DUPLEX* WALLBOARD

DESCRIPTION

Duplex Wallboard is a lightweight, rigid, square-edged, wood-fiber board—⅜" thick, 4' wide and 8' and 10' long, with Hi-Lite, stipple-texture finish.

FUNCTION AND UTILITY

As a low-cost predecorated utility wallboard, Duplex is used extensively for finishing walls and ceilings in attics, garages, cottages, basements and all types of temporary buildings.

LIMITATION OF USE

While its "k" value is 0.36—because of its ⅜" thickness and correspondingly reduced insulating effectiveness, Duplex Wallboard is recommended for use where the insulating function is of secondary importance, and where its thickness, strength and rigidity are satisfactory for the purpose.

DURON* HARDBOARDS

DESCRIPTION

DURON Hardboard is a strong, versatile ligno-cellulose material produced from natural wood by a special U.S.G. process. Both surfaces of USG Duron Hardboard are exceptionally smooth and has no grain or knots. This highly dense hardboard is manufactured both untreated and treated.

FUNCTION AND UTILITY

USG DURON Hardboard has a 1001 uses. Due to its various sizes, lightweight strength, and durability, this material is adaptable to both structural and commercial uses. USG Duron Hardboard can be sawed, nailed, punched, cut, bent, laminated, and decorated.

Paintable—Duron Hardboard's two hard homogeneous surfaces are exceptionally paintable; will take almost any form of finish—even wood graining and high gloss enamels.

Durable—Hardness without extreme brittleness, highly resistant to scuffing, abrasive action and indentation.

Smooth—Sleek, tight and smooth both sides; surface does not necessarily require further finishing—lends itself readily to laminating to itself or wood framing.

Strong—Strength is exceptional in relation to thickness, weight and density.

Workable—Adaptable to almost any fabrication form with conventional wood working equipment.

Economical—Showing significant savings in costly finishing materials, Duron is economical for the simple job . . . flexible for the complex job . . . Truly Duron is the Hardboard of 1001 uses.

TYPES

Regular DURON Hardboard—A knotless, grainless, dense and exceptionally hard and flexible board. Light in weight, it is capable of taking unusual wear and tear. *All Regular* Duron *has two smooth sides* which can take a wide variety of finishing processes. Regular Duron is available in ⅛", 3/16" or ¼" thickness.

Treated DURON Hardboard—Stronger than Regular Duron Hardboard and also smooth-two-sides. Treated Duron has harder, more moisture-resistant and scuff-resistant surfaces that excel in finishability. Treated Duron has been impregnated with special oils, which are polymerized by baking. Available in ⅛", 3/16" or ¼" thickness.

Sizes: Regular and treated ⅛" and 3/16" available in: 4 x 2, 4 x 3, 4 x 4, 4 x 6, 4 x 8, 4 x 9, 4 x 10, and 4 x 12. Regular and treated ¼" available in 4 x 2, 4 x 3, 4 x 4, 4 x 6, 4 x 8, 4 x 10, and 4 x 12. *(See Note under Structoboard.)*

STRUCTOBOARD

Although manufactured by the same process as the hardboard, and possessing many of the same qualities and physical characteristics, because of its lesser density and corresponding lower strength and hardness, it is not classified as a hardboard. Available sizes are: 4 x 3, 4 x 4, 4 x 6, 4 x 8, 4 x 10, and 4 x 12. *(Note: 4' x 16' size available in some areas.)*

HARDBOARD UNDERLAYMENT

Duron Underlayment is an excellent base for linoleum, asphalt tile, vinyl tile, rubber tile, cork tile and other floor coverings. The strong rigid sheets eliminate the uneveness in the sub-floor and cover the joints and cracks. It is easily nailed and its smooth level surface assures a good bond between the underlayment and the linoleum or tile. This ¼" material is available in both 4 x 3 and 4 x 4.

PERFORATED HARDBOARD

⅛" Regular—Smooth both sides, this material has perforations 3/16" on 1" centers. Commonly used as room divider or to hang light weight tools and utensils. Available in 4 x 3, 4 x 4, 4 x 6, 4 x 8, 2 x 3, 2 x 4, 2 x 6, and 2 x 8.

⅛" Treated—Smooth both sides with 3/16" perforations on 1" centers. Widely used throughout the home, it is especially adaptable in places where strength and moisture-resistance is a factor. Extremely strong, it can withstand a high degree of rough usage. Available in same sizes as ⅛" Regular Perforated Hardboard.

¼" Heavy Duty—Smooth both sides with 9/36" perforations on 1" centers. Extremely suitable for room dividers and where heavy objects are to be hung, such as garden and maintenance equipment. It is both untreated and treated. The untreated board is available in 4 x 4, 4 x 6, 4 x 8, 2 x 4, 2 x 6, and 2 x 8. Treated is only available in 4 x 6 and 4 x 8.

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*T. M. Reg. U. S. Pat. Off.

DECORATIVE INSULATIONS

DESCRIPTION

USG Decorative Insulation is rigid wood fiber insulating board made into predecorated interior wall and ceiling units. The products are fabricated from homogeneous mats manufactured of wood fiber produced from new timber.

USG wood fiber ceiling tiles provide economical materials for interior finishing in residential, commercial and institutional construction and remodelling. In addition to decoration, QUIETONE* Ceiling Tiles furnish an economical means of sound conditioning interior areas.

PANEL-TILE

Panel-Tile is an unscored rectangular ceiling tile that can be installed to produce varied rectangular designs, rather than a square-patterned ceiling. Used with square tile or USG Twin-Tile, interesting ceiling mosaics can be developed. Available with tongue-and-groove edge in sizes: 12″ x 24″ and 16″ x 32″. Color: Hi-Lite (Ivory) finish. Thickness: ½″.

TWIN-TILE

TWIN-TILE* is the original double-size ceiling tile. This larger unit permits a faster, stronger installation with staggered joints. Twin-Tile is manufactured with a tongue and groove edge. Sizes: 12″ x 24″ and 16″ x 32″. Thickness: ½-inch. Color: Hi-Lite (Ivory) finish.

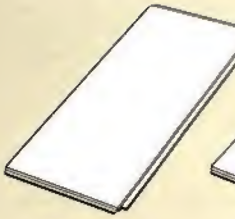
USG CUSTOM TILE

This tile provides the ultimate ceiling treatment for interiors which do not require a sound conditioning material. USG Custom Tile features smooth painted bevelled edges and a bright, white surface with a light reflectance of more than 80%. Custom Tile is available in both Twin-Tile (cross-scored units to resemble square tile) and Panel Tile. Sizes: 12″ x 24″. Thickness: ½″. Edge: Tongue and Groove. Color: Bone White.

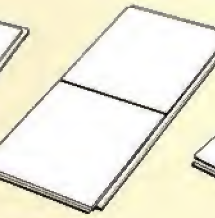
USG FASHION TILES

Printed in patterns designed by Gyorgy Kepes, USG Fashion Tiles provide a smooth, gentle overall ceiling design that compliments and conceals the tile joints and the surface acoustical treatment. These patterned tiles are manufactured in both QUIETONE* Acoustical Tile and USG Twin-Tile.

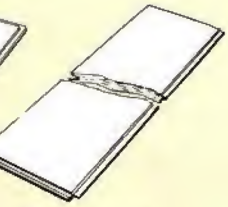
Fashion Tiles are pre-decorated with two striking designs. The Random Line design is a non-directional pattern. It is printed in two colors, Coppertint and Pewter Gray, on the Bone White Regular Pattern Perforated QUIETONE Acoustical Tile. This pattern is also printed on Twin-Tile. The Rib Line design Fashion Tile is a directional pattern and is available only in Pewter Gray color on Slotted QUIETONE. This directional pattern can be effectively used to accent or diminish interior dimensions. *Sizes:* 12″ x 24″ and 12″ x 12″ (QUIETONE Fashion Tile only). *Edges:* Tongue and groove edge (12″ x 24″ only), Bevelled Butt edge (12″ x 12″ QUIETONE Fashion Tile only). *Colors:* Coppertint and Pewter Gray on Bone White (QUIETONE only); Coppertint and Pewter Gray on Hi-Lite (Twin-Tile only).



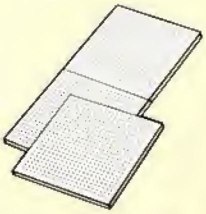
INSULATING
PANEL TILE,
HILITE FINISH



INSULATING
TWIN TILE,
HILITE FINISH

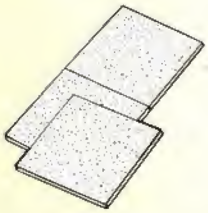


INSULATING PLANK,
HILITE OR BLENDTEX
FINISH

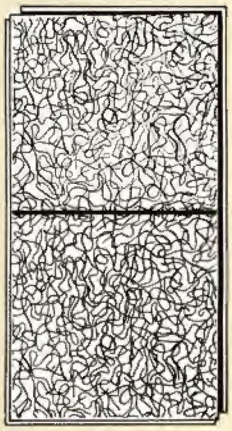


QUIETONE ACOUSTICAL TILE
WITH PERFORATED SURFACE

Both available as square tiles (for adhesive application) or center scored twin-tiles (for concealed nailing or stapling).

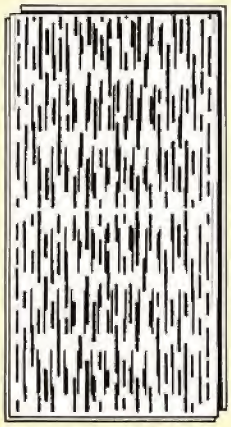


QUIETONE ACOUSTICAL TILE
RANDOM PERFORATED



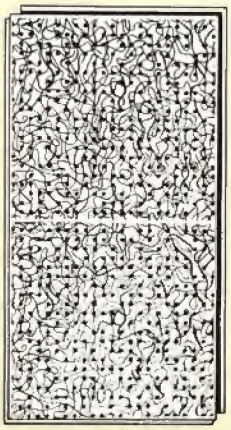
Available in twin tile (center scored);
solid surface;
random lines;
Coppertint and pewter gray finish
Thickness: ½″
Sizes: 12″ x 24″

FASHION INSULATING
TWIN TILE



Available in square or twin tile (center scored);
Slotted; perforated surface;
Rib or random lines;
Pewter gray finish
Thickness: ½″
Sizes: 12″ x 12″
12″ x 24″

FASHION QUIETONE
ACOUSTICAL TILE



Available in square tile or twin tile (center scored);
Random perforated surface;
Random lines;
Coppertint & pewter gray finish
Thickness: ½″
Sizes: 12″ x 12″
12″ x 24″

FASHION QUIETONE
ACOUSTICAL TILE

*T. M. Reg. U. S. Pat. Off.

QUIETONE* WOOD FIBER ACOUSTICAL TILE

QUIETONE Acoustical Ceiling Tile is available with three different patterns of acoustical surfaces. Regular Pattern QUIETONE has 3/16″ hollow-drilled holes spaced ½-inch on centers across the entire surface of the tile. Random Pattern QUIETONE has varying-sized perforations scattered across the exposed surface of the tile. The new Slotted QUIETONE offers acoustical treatment and decoration through crisply cut, regularly spaced slots in the tile surface. All QUIETONE ceiling tile has a highly light-reflecting, soil-resisting, white paint surface. Sizes: 12″ x 24″, 12″ x 12″. Thickness: ½-in. and ¾-in. Edge: Tongue and groove (12″ x 24″ only) and Butt Bevel (12″ x 12″ only). Color: Bone White.

QUIETONE **Sound Absorption Coefficients**

Description	Thick-ness	Mount-ing	Coefficients of Cycles Shown						NCR	wt. psf
			125	250	500	1000	2000	4000		
Regular Perfo-rated	½″	1	.14	.27	.61	.68	.66	.68	.55	.74
		2	.15	.69	.48	.59	.70	.68	.60	.74
	¾″	1	.13	.35	.71	.82	.77	.64	.65	.94
		2	.25	.65	.57	.79	.78	.63	.70	.91
Random Perfo-rated	½″	1	.11	.26	.52	.57	.60	.66	.50	.73
		2	.18	.60	.40	.47	.63	.77	.55	.74
	¾″	1	.22	.34	.71	.74	.77	.72	.65	.92
		2	.29	.67	.54	.68	.75	.65	.65	.95
Slotted	¾″	1	.18	.29	.72	.82	.84	.71	.65	.87
	¾″	2	.20	.62	.50	.67	.82	.73	.70	.93

LIGHT REFLECTION: Bone white, 79%
HEAT CONDUCTIVITY: k=0.38

Test by official A.M.A. Laboratory

FUNCTION AND UTILITY

Decorative—Many designs and patterns are possible with combinations of various sizes of tile.

Insulating—The ½″ thickness, with a thermal conductance of 0.72, is equal to approximately 19″ of stone concrete in resistance to heat transfer.

Tongued and Grooved—The Kwik-Lok joint featured on Twin-Tile and Panel-Tile, is designed specially for application utilizing the automatic stapling machine or tacker. This wide flange tongue and groove edge interlocks securely preventing harmful discoloration caused by joint "breathing" and assures better alignment of units for true and level ceilings.

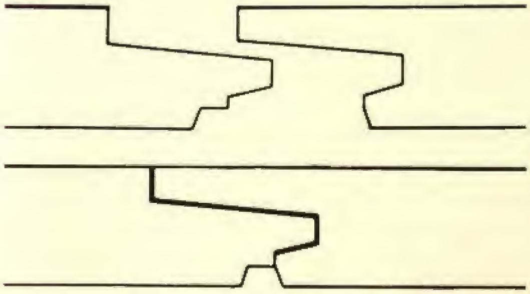
Economical—Sizes 12″ x 24″ and 16″ x 32″, ½″ Twin-Tile are center-scored to exactly simulate 12″ x 12″ and 16″ x 16″ patterns. This "two-in-one" feature reduces application costs on square patterns by at least 40%. Panel-Tile unit sizes are the same as Twin-Tile but without the center scoring. This produces a rectangular instead of a square pattern. The stapling method of application offers a saving up to 50%.

Easy Application—USG Tile may be stapled or nailed to conventional wood supports or may be applied to solid surfaces with adhesives. Practically any type of interior wall or ceiling may be finished with these materials.

Easily Maintained—Ordinary surface dust may be removed by using wallpaper cleaner. Redecorating may be done with good lead and oil or water-thinned emulsion paints; TEXOLITE* is recommended.

LIMITATIONS OF USE

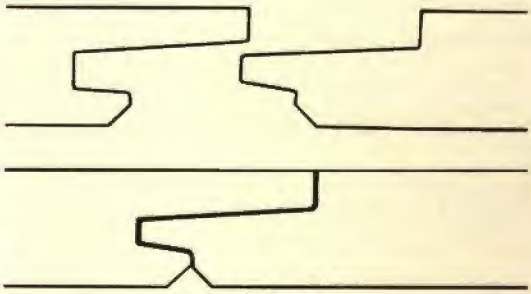
1. Supports must be spaced not to exceed 16″.
2. Where adhesive method of application is used, the adhesive must be prepared and used in strict accordance with manufacturer's directions.



Joint on sides and ends of Twin Tile, Panel Tile, Fashion Twin Tile and long edges of Decorative Plank.

Kwik-Lok Joint—

USG Fashion Twin-Tile—ceiling application.



Joint on sides and ends of regular QUIETONE Acoustical Twin Tile and Fashion QUIETONE Acoustical Double Tiles and Custom Tiles

Kwik-Lok Joint—

USG Insulating Twin-Tile—ceiling application.
USG Insulating Plank—side wall and column application.

INSULATING WOOL

SCOPE

Unless otherwise shown on plans, all insulation shall be furnished and installed according to these specifications.

MATERIAL

Insulation shall be (installed in accordance with the Manufacturers Recommendations) (delete those not applicable)
6″ Thick RED TOP* Insulating Wool Blankets
3″ Thick RED TOP Insulating Wool Blankets
2″ Thick RED TOP Insulating Wool Blankets
1½″ Thick RED TOP Insulating Wool Blankets
3″ Thick RED TOP Reflective Insulating Wool Blankets
2″ Thick RED TOP Reflective Insulating Wool Blankets
3″ Thick RED TOP Reflective Insulating Wool Blankets foil on one side only—foil vapor barrier on foil breather
2″ Thick RED TOP* Reflective Insulating Wool Blankets foil on side only—foil vapor barrier or foil breather
RED TOP Nodular Wool
USG Nodular Wool
All to be as manufactured by the United States Gypsum Company.

APPLICATION

Insulating Wool Blankets shall be installed within the stud spaces of all exterior walls and between the framing members of the top floor ceiling or roof by (1) attaching the flanges of the wool blanket to the face of the framing members, (2) recess the blanket and tack the flanges to the sides of studs or joists. The asphalted vapor barrier shall face the inside of the building and the nailing flanges shall be tacked or stapled securely. Sufficient tacks or staples shall be used to avoid gaps or bulges in the vapor barrier paper. In no case, shall they exceed a spacing of 6″ on centers. Apply Insulation in all framing spaces as specified and, where necessary, the insulation and vapor barrier shall be cut to fit in a neat and workmanlike manner.

PERIMETER INSULATION

1. Perimeter edge of concrete floor slab shall be insulated with Perimeter Insulation as manufactured by the U.S. Gypsum Company. Insulation shall be (¾″) (1″) (1½″) (2″) thick and as shown on drawings.
2. Vertical application—Inside of foundation.
   With all exterior masonry and poured concrete walls, Perimeter Insulation ________ shall be installed against the inside face of the foundation prior to back filling and before any base-layer of gravel, stone or cement slab itself is put in place. Permanent attachment is not required. Insulation may be held firmly in place by temporary bracing or the pressure of back fill. Butt edges of board together. Care should be taken so as not to damage insulating when back fill is put in place.
3. Vertical Application—Exterior of foundation.
   For exterior application trench shall be dug around exterior 12 inches or more below grade. Exposed surface of foundation shall be cleaned of dirt and painted with asphalt foundation primer. USG Perimeter Insulation ________ inches thick shall be cemented to the surface of the foundation with mastic asphalt cement butting edges of board together. Metal flashing shall be installed above insulation to shield from elements. Asbestos cement board or Portland cement stucco shall be applied over the outside exposed surface of the insulation.
4. Horizontal Application.
   Where horizontal insulation is specified USG Perimeter Insulation ________ inches thick shall be installed after gravel fill has been built up to grade and thoroughly tamped. Insulation shall be layed in place with edges pressed together and butting foundation wall or vertical insulating applied adjacent to it.
5. When called for on the drawings, a vapor barrier of 55# asphalt roll roofing shall be laid over the underbed.
6. All work shall be done by experienced contractor and completed in a neat and workmanlike manner.

USG INSULATING ROOF DECK

Unless otherwise shown on plans, all roofs shall be decked with (USG Regular Insulating Roof Deck) (USG Sealed Insulating Roof Deck) manufactured by United States Gypsum Company and installed in accordance with the manufacturer's recommendations and application methods.

USG ROOF INSULATION

SCOPE

As shown on plans the following roof areas shall be insulated with fiber board rigid roof insulation.

GENERAL

All insulation shall be kept dry during and after application. The surface of the roof deck shall be sound, broomed clean, free from dirt, reasonably smooth and thoroughly dry. Only as much USG Roof Insulation shall be laid over roof area as can be covered with finished roofing in one day. Boards shall be placed together snugly but never forced into place. Boards shall be laid in parallel courses with end joints of each course breaking with those adjoining courses.

MATERIAL

Insulation shall be (specify C-factor 0.72, 0.36, 0.24, 0.15 0.12) USG Roof Insulation as manufactured by the United States Gypsum Company. Size shall be 24″ x 48″.

Vapor Barrier

Vapor barriers shall be used on decks of heated buildings wherever the average January temperature is below 45°F. Vapor barriers shall be used on all buildings in which excessive moisture conditions prevail. The vapor barrier shall consist of two plies of 15 lb. felt solidly mopped together, or a simple ply of 45 lbs. per square coated asphalt roofing felt, applied with coated surface down. The vapor barrier shall be wrapped around the insulation and mopped back 6 inches at walls and other vertical projections.

Water Cut-Offs

The roof insulation shall be isolated in areas no greater than 30 square feet over the entire roof and at first full insulating board joint back from parapet walls or borders.

APPLICATION OVER WOOD DECKS

Where No Vapor Barrier is Used

Space nails 12 inches apart. Each board shall be secured in place by nailing each edge and staggered along the longitudinal center line. If two layers of insulation are used, nailing should be through both layers. Use large-headed galvanized nails (not less than 7/16 inch head) of sufficient length to pass through the insulation and penetrate the roof boards at least ¾″. Nails should not pass through the roof deck.

With Vapor Barrier Coal Tar Pitch

The wood deck shall be covered with red rosin sheathing paper and two plies of 15 lbs .tarred felt. Lay successive felt plies with 19″ overlap and solidly mop between plies. The laps to be front nailed on 18″ centers with caps and nails.

Vapor Barrier—Asphalt Application

Over the entire roof apply a vapor barrier consisting of two plies of 15 lbs. asphalt felt, each sheet laid 19 inches over the preceding one, and each sheet back-nailed at intervals not to exceed 18″. Mop solidly the 19 inch lap with steep roofing asphalt.

Alternate:

Apply a vapor barrier sheet of 45 lb. coated (both sides) asphalt roofing felt, lapping each sheet 4″ and solidly cementing these laps. Nail each lap with galvanized barbed roofing nails spaced not over 2″ O.C.

Application of Insulation by Mopping

Embed each board firmly in a solid mopping of bitumen. Only sufficient area to provide complete embedment of each insulating board shall be mopped at a time. Where two layers of insulating board are to be applied, solid mop the exposed surface of the first layer liberally with hot bitumen. Embed each board of the second layer firmly in the solid mopping of bitumen.

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*T.M. Reg. U.S. Pat. Off.

APPLICATION OVER CONCRETE, GYPSUM AND UNIT TILE

Priming the deck—If coal tar pitch is used no primer is necessary. If asphalt is used, prime the deck with asphalt primer.

Vapor Barrier

A vapor barrier shall be used in all cases on poured concrete and poured gypsum decks. Apply two plies of 15 lbs. felt lapped half. Each ply shall be solidly mopped to the deck and also between plies, followed by thorough brooming down of felts. If deck is of poured gypsum, strip or center mopping shall be used. Over precast cement slabs, gypsum plank, book tile or similar units, apply (insulation board) (vapor barrier) directly to deck by spot strip or center mopping, keeping the mopping back approximately 4 inches from the joints when using pitch. If steep asphalt is used, it may be solidly mopped.

Application of Insulation

See application of insulation by mopping.

APPLICATION OVER STEEL DECKS

The steel deck shall have a shop coat of paint or primer. Pitch shall not be used for bonding felt or insulation to steel decks. Application of insulation—see application by mopping.

Application Over Steel-Sloping Decks

Where insulating board is applied over roof decks having a slope of 1" or more per foot, each board shall be secured to the steel deck with mechanical fasteners supplied by the deck manufacturer. Mopping of bitumen should be used to augment the mechanical fasteners.

On steep roof decks having a slope of 3 inches or more per foot, provision shall be made for additionally securing the roof insulation by nailing or other mechanical fastening in accordance with the roofing manufacturers' requirements.

Application of Built-up Roofing

Built-up roofing shall be applied in accordance with manufacturer's specifications.

USG INSULATING SHEATHING

SCOPE

Unless otherwise shown on plans, all exterior walls shall be sheathed according to these specifications.

MATERIALS

Sheathing shall be USG Insulating Sheathing, manufactured by United States Gypsum Company.

Nails shall be galvanized, 7/16" head diameter, 1¾" long roofing nails for 25/32" sheathing, and 1½" long for ½" sheathing.

APPLICATION

Apply USG 25/32" or ½" Insulating Sheathing with the long dimension across the supports and with the protruding edge up. Ends of sheets shall abut over centers of supports, and all end joints shall be staggered.

Apply 25/32" or ½" by 4 ft. wide sheathing with long dimension parallel with the supports. Sides and ends shall abut the vertical framing members, top and bottom plates or headers. Fit snuggly around all windows and door openings. Secure sheathing to studs with nails spaced approximately 3" on outside framing members (6" apart on intermediate framing) except where exterior finish is secured to the frame with nails driven through the sheathing and into the studs, in which case nails be spaced approximately 8" on centers.

Nail to intermediate studs first. Nails shall be not less than ⅜" from edges or ends of sheathing.

USG HARDBOARD UNDERLAYMENT

New Construction

1. Sub-floor should be properly nailed tongue-and-groove flooring, dry and well seasoned. Building paper should be laid over sub-floor prior to application of underlayment, except over unheated crawl spaces, use a vapor barrier instead of building paper.

Extreme

2. Irregularities in the sub-floor should be minimized by sanding high spots or filling low spots.
3. Hardboard Underlayment panels shall be unwrapped and separately placed on edge about interior for 24 hours prior to installation. Underlayment shall not be installed until all masonry work is completed and the building is free of dampness.
4. Nail Application. Start application in corner of room. Allow ⅛" between underlayment and wall. Allow 1/16" spacing between adjoining panels. Joints in underlayment shall not fall directly on joints in sub-floor. Use 1¼" annular ringed drive screw underlay nails, or 4d cement-coated sinker-nails. Space nails 6" apart over entire panel and not closer than ⅜" to the edge. Begin nailing at center of panel. Underlayment joints should be staggered. Nails should be set flush.
5. Staple Application. Use No. 77DC staple applied with a Model AF Spotnailer nailing machine. Starting at center of panel, space staples 6" apart over entire surface and 3" apart around edges and ½" from the edge. Glue asphalt felt over underlayment prior to application of thin linoleum or plastic tiles.

USG SHINGLE BACKER

Shingle Backer shall be USG Shingle-Backer as manufactured by the United States Gypsum Co.

Use of Wood, Asbestos Cement or Slate Shingles over USG Insulating Sheathing

Apply USG Shingle-Backer over USG Insulating Sheathing:

(a) **Wood Shingles:** Nail a cant strip of wood lath to bottom edge of sidewall to provide a nailing base for the first course of Shingle-Backer and shingles.

(b) Apply first course of Shingle-Backer extending ½" below the cant strip. Center end joists on studs. Nail with 8d, 2½" galvanized box mails at the bottom of the unit at each stud and nailing through the cant strip, sheathing, and into the stud.

(c) First course of wood shingles is nailed with butt edge extending ½" below first course of Shingle-Backer. Nail shingles along butt edge with 2" annular ringed or grooved galvanized nails centered on and penetrating into the wood cant strip.

(d) Before applying a second course of Shingle-Backer determine the exposure desired for shingles. Use shiplap wood sheathing or chalk line to provide alignment. Wood cant strip is eliminated on this and succeeding courses. The Shingle-Backer is nailed with 8d galvanized nails along the lower edge at stud locations. Nails are driven through the first course shingle and Shingle-Backer, sheathing and into the studs.

DECORATIVE & ACOUSTICAL WOOD FIBER TILES

1. SCOPE

(Architect will list all areas to receive acoustical or decorative treatment).

2. GENERAL PROVISIONS

2a. Bases to receive acoustical or decorative units and the units themselves shall not be installed unless satisfactory closures for windows and other openings are in place and roofs are tight. Temperatures in working areas shall be well above freezing.

2b. Bases to receive acoustical or decorative units adhesively applied shall be clean, sound, dry and free of moisture.

2c. The area or room in which acoustical or decorative units are to be installed shall not be damp; i.e. plaster, terrazzo floor, etc., shall be previously installed and dry.

2d. Acoustical or decorative units shall not be adhesively installed to roof slabs during extremely hot weather.

3. MATERIALS

3a. Acoustical Tile Shall Be

3a-1. Slotted Quietone Wood Fiber Acoustical Tiles (½" thickness x 12" x 12" Butt Bevel, or 12" x 24" with Kwik-lok Tongue and Groove edges) as manufactured by United States Gypsum Company. (Specify finish; Bone White or Decorative Rib Line Pewter Gray).

3a-2. Regular Perforated Quietone Wood Fiber Acoustical Tiles (½" or ¾" thickness x 12" x 12" Butt Bevel, or 12" x 24" with Kwik-lok Tongue and Groove edges) as manufactured by United States Gypsum Company. (Specify finish; Bone White, or Decorative Random Line Coppertint or Pewter Gray).

3a-3. Random Perforated Quietone Wood Fiber Acoustical Tiles (½" or ¾" thickness 12" x 12" Butt Bevel, or 12" x 24" with Kwik-lok Tongue and Groove edges) as manufactured by Unites States Gypsum Company. (Specify finish; Bone White, or Random Line Coppertint or Pewter Gray).

3a-4. Insulating Twin-Tile, a center scored, solid surfaced Wood Fiber Tile (½" thickness 12" x 24", or 16" x 32" with Kwik-lok Tongue and Groove edge) as manufactured by United States Gypsum Company. (Specify finish; Hilite, or Decorative (available 12" x 24" only) Random Line Coppertint or Pewter Gray).

3a-5. Insulating Panel-Tile, a solid surfaced, Wood Fiber Tile, (½" thickness, 12" x 24", or 16" x 32" with Kwik-lok Tongue and Groove edge) as manufactured by United States Gypsum Company. (Specify finish; Hilite).

3a-6. Custom Twin-Tile, a center scored, solid surfaced Insulating Wood Fiber Tile, (½" thickness 12" x 24" or 16" x 24" with Kwik-lok Tongue and Groove edges) as manufactured by United States Gypsum Company. (Specify finish; Bone White, Beveled edges painted).

3a-7. Custom Panel-Tile, a solid surfaced Wood Fiber Tile (½" thickness x 12" x 24", or 16" x 32" with Kwik-lok Tongue and Groove edges) as manufactured by United States Gypsum Company. (Specify finish; Bone White, Beveled edges painted).

3b. Gypsum Board Base Shall Be:

3b-1 A ½" (or ⅝") gypsum board base conforming with Dry-Wall Manufacturers Assoc. specifications for adhesive application of acoustical or decorative wood fiber tile.

4. APPLICATION AND INSTALLATION

4a. Adhesive Application: (½" or ¾", 12" x 12" QUIETONE Wood Fiber Acoustile Tile only).

4a-1. The adhesive shall be of a type manufactured expressly for the purpose shall not be water soluble nor contain ingredients that react chemically with paint, nor contain a solvent that has a stronger solvent action on an oil paint than naphtha; it shall contain no alcohol.

4a-2. Installation Shall Be:
The acoustical units shall be primed with adhesive prior to the application of the 4 spots of adhesive placed near the corners of the tile. The adhesive shall be approximately 2½" in diameter after the tile has been pressed into position on the ceiling. Acoustical units shall be placed so that the face surface of the acoustical ceiling is aligned and level.

4b. Adhesive Application (½" x 12" x 24" Kwik-lok Tongue and Groove QUIETONE, Insulating Twin-Tile, Insulating Panel-Tile, Custom Twin-Tile, or Custom Panel-Tile).

4b-1. Same as 4a-1.

4b-2. Installation Shall Be:
The acoustical units shall be primed with adhesive prior to the application of the 6 spots of adhesive; place 4 spots of adhesive near the corners of the 12" x 24" units and 2 spots near the edges of the tile at the centerline of the 24" dimension. The adhesive shall be approximately 2½" in diameter after the tile has been pressed into position on the ceiling. Acoustical units shall be placed so that the face surface of the acoustical ceiling is aligned and level.

4c. Staple Application (½" thickness 12" x 24" Kwik-lok Tongue and Groove edged, QUIETONE, Insulating Twin-Tile, Insulating Panel-Tile, Custom Twin-Tile or Custom Panel-Tile, ½" x 16" x 32" Insulating Twin-Tile, Insulating Panel-Tile, Custom Twin-Tile, Custom Panel-Tile; ¾" x 12" x 24" QUIETONE Wood Fiber Acoustical Tile).

4c-1. Accessories Shall Be:
Furring Strips—wood (soft white pine), 1" x 3" minimum size (when required). Staples—$\frac{9}{16}$" long, coated.

4c-2. Installation Shall Be:
Wood furring strips or wood framing shall be installed and level (12" or 16" on center for wood fiber acoustical or decorative tiles when applied at right angles.) Furring strips shall be installed parallel to (area axis); or diagonal. The units shall be installed by stapling the advancing tongue edge, of the wood fiber tile, to the wood furring strips or wood framing.

4d. Nail Application (½" thickness 12" x 24" Kwik-lok Tongue and Groove edged, QUIETONE, Insulating Twin-Tile, Insulating Panel-Tile, Custom Twin-Tile or Custom Panel-Tile; ½" x 16" x 32" Insulating Twin-Tile, Insulating Panel-Tile, Custom Twin-Tile, Custom Panel-Tile; ¾" x 12" x 24" QUIETONE *Wood Fiber Acoustical Tile*).

4d-1. Accessories Shall Be:
Furring Strips—wood, (soft white pine), 1" x 3" minimum size (when necessary). Nails Shall be—for ½" wood fiber tiles, use 1⅛" blued lath nails. For ¾" wood fiber tiles, use 1¼" blued lath nails.

4d-2. Installation Shall Be:
Wood furring strips or wood framing shall be installed and level (12" or 16" on center for wood fiber acoustical or decorative tiles when applied at right angles.) Furring strips shall be installed parallel to (area axis); or diagonal. The units shall be installed by nailing the advancing tongue edge, of the wood fiber tile, to the wood furring strips or wood framing.

4e. Screw Application (½" thickness 12" x 24" Kwik-lok Tongue and Groove edged QUIETONE, Insulating Twin-Tile, Insulating Panel-Tile, Custom Twin-Tile or Custom Panel-Tile; ½" x 16" x 32" Insulating Twin-Tile; Insulating Panel-Tile; Custom Twin-Tile, Custom Panel-Tile; ¾" x 12" x 24" QUIETONE Wood Fiber Acoustical Tile).

4e-1. Accessories Shall Be:
Furring Strips—Wood, 1" x 3" minimum size (when necessary). Gypsum Boards Bases—½"x 4' x 8', 9', 10', 12', or 14' ("V" or square-edged) SHEETROCK* FIRECODE*, ½" x 2' x 8' BAXBORD* Backing Board, or ½" x 2' x 8 or 4' x 8" USG Asphalt Impregnated Gypsum Sheathing nailed to wood framing. *Note: Consult your U.S.G. Representative for recommendations in the use of ⅜" or ⅝" Gypsum Board Bases when they are desired.*
Screws—⅞" long No. 4 flat head screws for ½" wood fiber tiles. Use a 1", No. 4 flat head screw for attachment of ¾" thick tongue and groove fiber tiles.

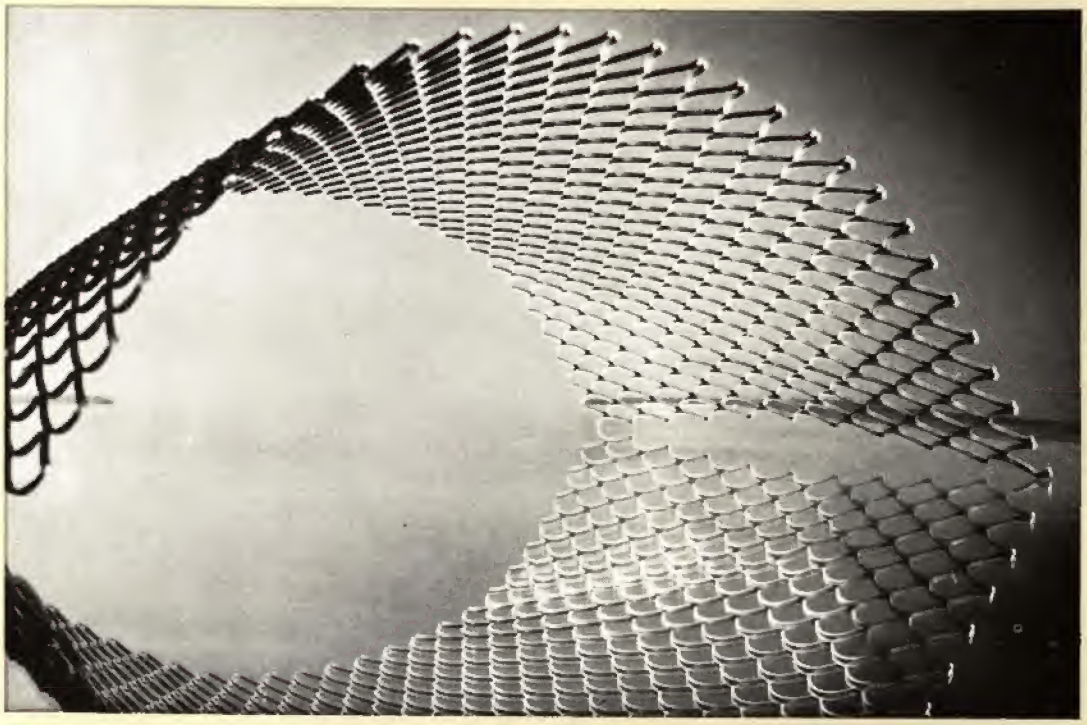
4e-2. Installation Shall Be:
Wood furring strips or wood framing shall be installed and level (12" or 16" on center for wood fiber acoustical or decorative tiles when applied at right angles.) Furring strips shall be installed parallel to (area axis); or diagonal. The units shall be applied by screw attachment of the advancing tongue edge of the wood fiber tiles, to the wood furring or wood framing.
Gypsum Board Bases—shall be nailed to wood framing in accord with manufacturers standard nailing recommendations. Spacings for wood furring strips (size or base shall be sufficient to carry Gypsum board and tile), wood framing, or special metal nailing channels should not exceed 16" on center when using ½" (square edge) thick gypsum boards or 24" on center when using ½" ("V"" Edge) thick gypsum board or sheathing base.

*T.M. Reg. U.S. Pat. Off.

A.I.A. File 15-T 30-J

TECHNICAL INFORMATION

USG® EXPANDED METALS



UNITED STATES GYPSUM

1960

A.I.A. File 15-T 30-J

THE SHAPE OF THINGS TO COME

At a time when our economy has demonstrated its greatest need for product innovations to stimulate consumer buying, United States Gypsum presents advanced designs in expanded metals for new ideas in architectural and product design.

Six dramatic new patterns—ARMORWEAVE, FESTOON, CATHEDRAL, WAVELENGTH, RONDO and MIN-X—join the accepted and widely used EXPAND-X expanded metal pattern to offer an exciting new series of expanded metals that open new frontiers for everyone concerned with design, manufacture and sale of products for better living.

Here, from the drawing boards at U.S.G., come expanded metals with new warmth of appearance, with greater resistance to bending and less weight than the solid metal sheets from which they are made. Sheets of metal are slit and cold-drawn into continuous patterns. The strands and bonds of resulting meshes come to rest at a sharp angle to the original plane of the sheet, adding rigidity. Expanded metals in this form have thousands of uses. U.S.G. also produces these meshes flattened by pressure rolls, for applications where a smooth surface is desired. These versatile meshes are available in carbon steel, aluminum, and in some meshes, stainless steel.

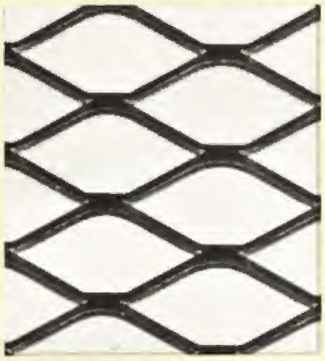
You who create, make and sell America's buildings and products can expand your horizons by adapting these decorative expanded metals to your purposes; can fashion, with new freedom, *the shape of things to come.*

AID TO ARCHITECTS AND DESIGNERS

To promote a better understanding of expanded metals and their use, and assure a satisfactory result for you; we offer design and sales service to aid architects and designers. A staff of engineers is equipped to assist in working out specific problems concerning design, fabrication, finishing and attachment of expanded metals. This service involves no obligation.

See Page 16 for a listing of offices where U.S.G. Sales Engineers and Architects Service Representatives are located.

EXPAND-X EXPANDED METAL

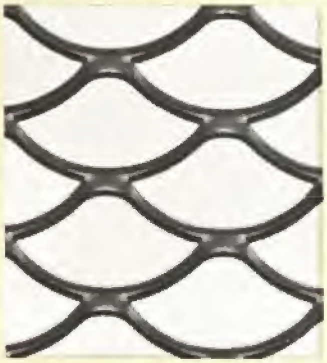


EXPAND-X is a diamond-shaped pattern of expanded metal with many applications in industrial plants and products. Its advantages over solid sheets—greater strength with less weight, visibility, free passage of light and air—make it ideally suited where protection, reinforcement, air flow and lighting are important.

When EXPAND-X is flattened in manufacture, the smooth level surface produced makes this expanded metal adaptable to hundreds of other uses.

EXPAND-X and Flattened EXPAND-X are available in a variety of weights and mesh sizes to meet varying conditions. See Pages 4 to 7 for information on these products.

DECORATIVE EXPANDED METAL



The six patterns of U.S.G. Decorative Expanded Metals are stimulating new ideas for product designers and architects everywhere. Here are materials that enhance a product's appearance and sales appeal while providing the advantages of light weight, strength and ease of fabrication.

Available in a variety of meshes—for appropriate visibility through the mesh; for air flow; for pleasing appearance; for modern functional styling. With these meshes you can achieve design treatments that add substantially to the product or building.

USG Decorative Expanded Metal is practical as well as beautiful. Special manufacturing techniques make them lighter, yet more rigid than solid sheet materials. They will not ravel when cut and may be easily welded and formed. Here, then, are materials which combine the beauty and utility so vital to the design of any product or building.

See Pages 8 to 11 for information on these products.

GRATE-X metal grating, a heavy type expanded metal.

AVAILABLE METALS

EXPAND-X and Flattened EXPAND-X manufactured from carbon steel, stainless steel and aluminum are available from stock. U.S.G. Decorative Expanded Metals are produced from carbon steel and aluminum. Other metals and alloys may be expanded to meet special requirements. Consult your nearest U.S.G. Sales Office for details and additional information. (See Page 16 for a list of offices).

FABRICATION

USG* Expanded Metals may readily be fabricated and formed in the same accustomed ways as sheet metals. They do not ravel when cut. They may be welded without difficulty, and absence of scale on the mesh facilitates perfect welds.

FINISHING

Architects and designers find many delightful color combinations in using painted, anodized or porcelain enameled USG Expanded Metals in correlation with colored fabrics or other materials. Painting and other types of finishing offer no problems with USG Expanded Metals. The surfaces are readily accessible to paint. All the accepted industrial methods of application may be used. USG aluminum Expanded Metal is easily anodized. Either steel or aluminum expanded metals can be successfully porcelain enameled in a wide range of colors. Additional information on finishing USG Expanded Metals may be found on Page 13.

NATIONWIDE DISTRIBUTION

Whatever your need for expanded metal, a U.S.G. Expanded Metal Distributor is ready to serve you. His warehouse is stocked with USG Expanded Metals to assure you of the prompt service you need *when you need it.* Contact the U.S.G. Sales Office for the name of the nearest distributor.

"USG", "GRATE-X" and "EXPAND-X" are registered trade-marks, and "RONDO", "FESTOON", "WAVELENGTH", "CATHEDRAL", "MIN-X", and "ARMORWEAVE" are trade-marks owned by the United States Gypsum Company, and all identify the particular expanded metal manufactured only by United States Gypsum Company.

REPRESENTATIVE USES

Architectural

- Air Duct Outlets
- Areaway Guards
- Shelving
- Storage Lockers
- Stairway Enclosures
- Laundry Partitions
- Factory Enclosures
- Skylight Guards
- Conveyor Guards

- Ceilings
- Partitions
- Accent Points
- Railing Guards
- Decorative Trim
- Patio Coverings
- Building Facades
- Ornamental Grilles
- Sun Screens
- Jalousie Covers
- Shutters
- Fencing
- Louvers
- Awnings
- Sign Backgrounds
- Space Dividers
- Folding Door Grilles

In Products

- Annealing Baskets
- Grain Driers
- Machine Guards
- Intake Grilles
- Harvesting Baskets
- Display Racks
- Filter Screens
- Tool Stand Shelves
- Drying Trays

- Displays
- Range Hood Vent
- Lawn Mower Guard
- Air Conditioner Grille
- Ornamental Screens
- Lamps
- Automobile Grille
- Beverage Racks
- Cabinet Doors
- Furnace Grilles
- Porch Furniture
- Breakfront Grilles
- Freezer Vent
- TV and Radio Grilles
- Book Shelves
- Screen Door Guards
- Room Dividers

Gratings, Walkways, Platforms, Stair Treads, Flooring, Scaffolding.

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ARCHITECTURAL: Decorative Facia & Sun Shade

IN PRODUCT: Decorative Grille

EXPAND-X*
EXPANDED METAL

DESCRIPTION

Below: are the USG Expanded Metals which impart their advantages to thousands of applications to make them lighter, stronger and more attractive.

EXPAND-X Expanded Metal is the diamond-shaped product in unflattened form. The strands and bonds are at a sharp angle to the original plane of the sheet. This factor adds strength to the expanded product.

FLATTENED EXPAND-X is made by passing the diamond-shaped expanded metal between pressure rolls. These flatten the material so that strands and bonds are in the same plane. This produces a material suitable for applications where a smooth flat surface is desirable.

DECORATIVE EXPANDED METAL offers design possibilities unlimited. Each expanded metal pattern is versatile enough to serve as the main design element, or to lend a valuable assist in the form of ornamental decoration.

The six decorative patterns—Armorweave, Festoon, Cathedral, Wavelength, Rondo and Min-x—retain the many important practical advantages of Expand-x and provide a design motif about which the architect or designer can exercise his personal creativity.

See Pages 8 to 11 for information on these products.

GRATE-X* Expanded Metal is a heavy type metal grating.

PROJECTION MESH is produced with small toothlike projections on the upper surface for maximum anti-skid qualities.

See Page 16 for detailed information on GRATE-X and PROJECTION MESH.

ADVANTAGES

Made in a wide selection of gauges and sizes. Light weight, with the other "plus" features of expanded metal compared to the original solid sheet. Since its introduction it has been a new material with a "thousand and one" new uses. It can be cut without raveling, and formed or welded.

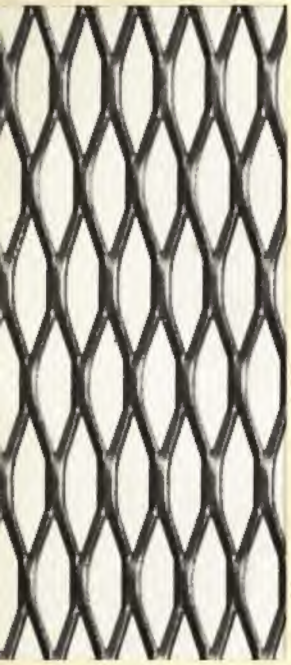
Choice of Materials. Carbon steel, stainless steel, and aluminum are available from stock. Copper, brass, bronze and other expandable metals may be had on special order.

Fabricating and Finishing

Welding—Arc, resistance or brazing methods can be used. Absence of scale on the mesh facilitates welding processes and makes a first class weld possible.

Painting—Both Expand-x and Flattened Expand-x Expanded Metal are shipped unpainted. The material can be painted, but should be clean and free from grease, and hung at an angle to prevent collecting of paint at bonds.

FULL SIZE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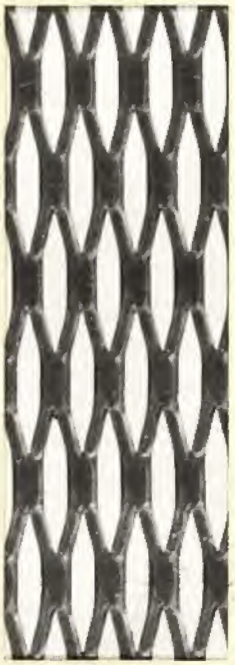
EXPAND-X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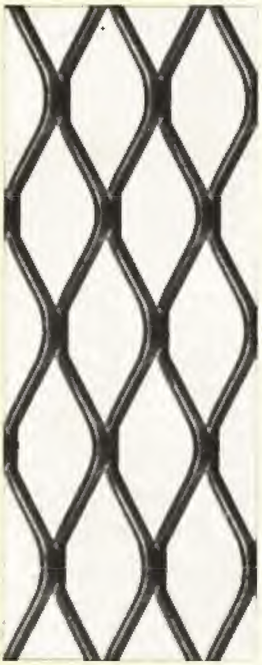
EXPAND-X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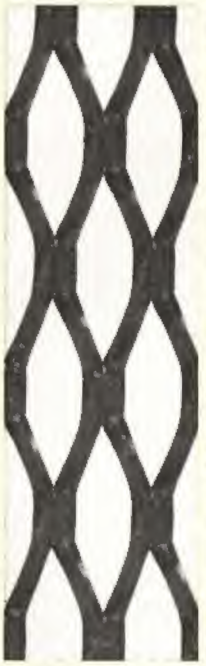
FLAT. EXPAND-X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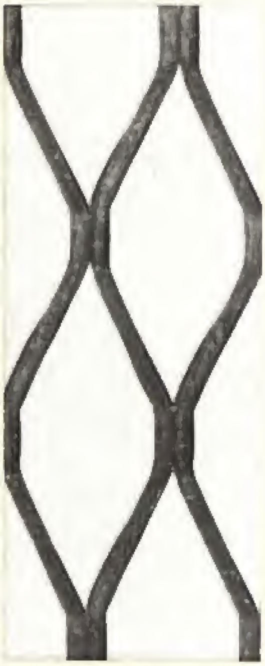
FLAT. EXPAND-X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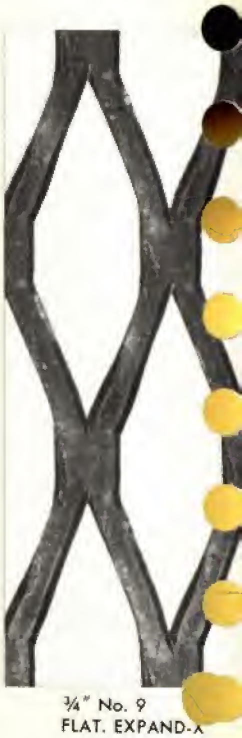

¾" No. 9
FLAT. EXPAND-X

*T.M. Reg. U.S. Pat. Off.

FUNCTION AND UTILITY

CARBON STEEL EXPAND-X. Carbon Steel Expand-X and Flattened Expand-X Expanded Metal, in addition to the inherent characteristics of solid sheet steel, combine light weight with the many other unique advantages of expanded metal over its original sheet form.

There are no rivets or welded joints except where units are joined. Strands of unflattened expanded metal are at an angle, thus distributing strain in many directions to the supporting structure and improving rigidity and bending resistance.

The large percentage of open area permits maximum passage of air and light.

The material can be readily cut into desired shapes without danger of raveled strands, and may be welded, bent and formed, drawn and flared. It is economical to apply and maintain. Various weights and sizes are available to meet varying needs.

There are a vast number of applications and uses for carbon steel Expand-X and Flattened Expand-X.

STAINLESS STEEL EXPAND-X. Stainless Expand-X and Flattened Expand-X Expanded Metal offer industry a material with the happy combination of the advantages inherent in stainless steel plus the advantages peculiar to the design of expanded metal. To engineers and product designers, this means new and improved products and equipment.

The stainless material is highly resistant to most types of corrosion and oxidation. This makes it ideal for applications in chemical, oil, textile, food processing, meat packing, dairy and beverage industries; household, surgical and marine equipment and electrical appliances.

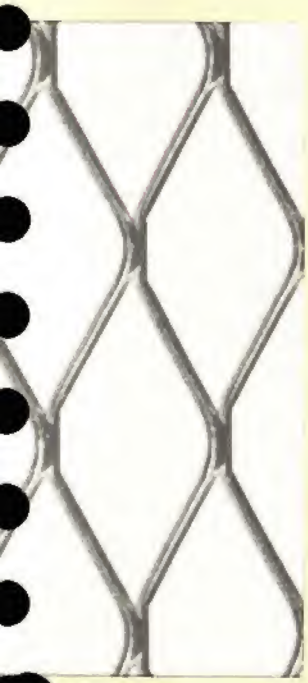
For further information on stainless Expand-X and Flattened Expand-X Expanded Metal and where it can be used, write for our technical pamphlet, "Stainless Expand-X".

ALUMINUM EXPAND-X. Aluminum Expand-X and Flattened Expand-X—a new material for industry, with all the advantages of aluminum, plus—lighter weight—a clean attractive design, which are added in the expanding process. Light weight—almost featherlight—with the unflattened expanded metal having many better performance properties than in its original sheet form—permits lighter weight equipment and appliances to ease work in industry and in the home.

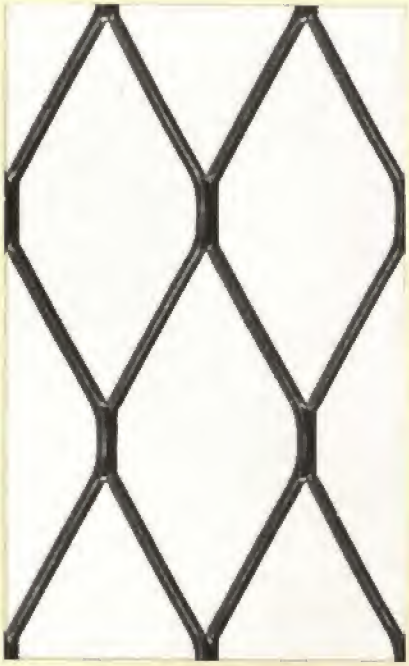
The highly pleasing appearance of Aluminum Expand-X and Flattened Expand-X Expanded Metal—its clean, geometric design, its lasting, corrosion-resisting, satiny finish—suggest a multitude of uses for products of unusual beauty. Food processing and chemical industries, especially, will find many uses for this new material. Maintenance costs of the aluminum material are negligible.

Aluminum Expand-X and Flattened Expand-X Expanded Metal fabricate easily, can be cut without raveling and be formed or welded.

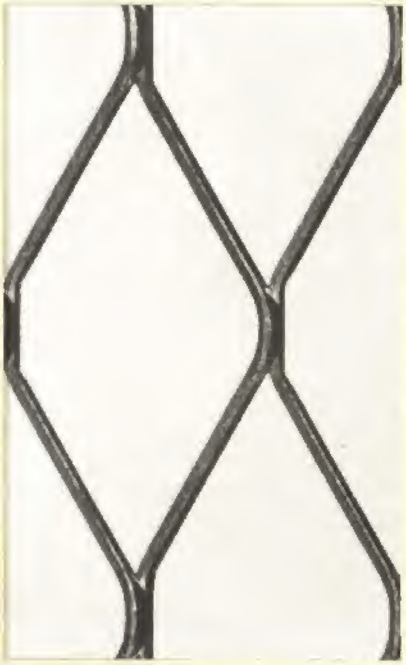
The wide variety of uses and applications of aluminum Expand-X and Flattened Expand-X includes many in the automotive, building, chemical, textile, mining, food processing and meat packing industries; electrical appliances, furniture, household, farming, photographic and sports equipment. For further information write for our technical pamphlet, "Aluminum Expand-X Expanded Metal."



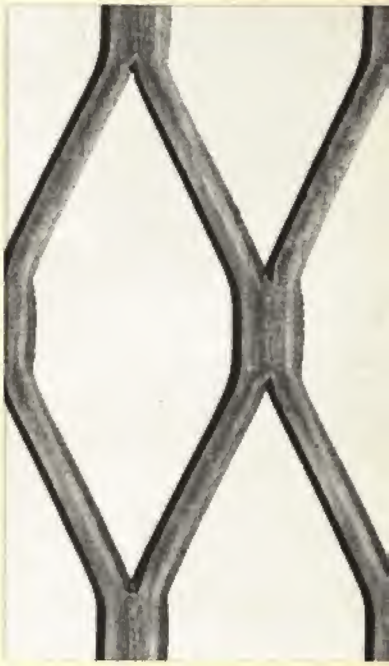
¾" No. 16
EXPAND-X



1" No. 16
EXPAND-X



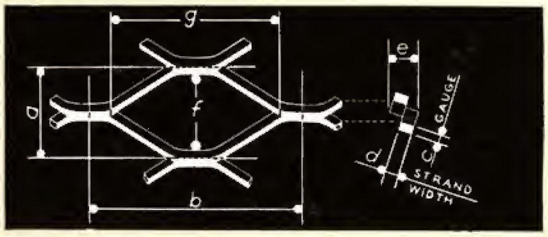
1½" No. 13
EXPAND-X



1½" No. 9
FLAT. EXPAND-X

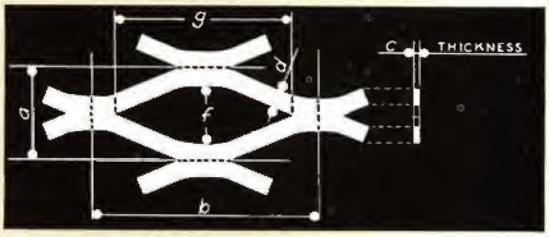
EXPAND-X
EXPANDED METAL

TECHNICAL DATA



EXPAND-X

All weights and dimensions are approximate



FLATTENED EXPAND-X

Styles Available	Wt. Lbs. C Sq. Ft.		Diamond Size a x b inches	Opening Size f x g inches	Strand c x d inches	Overall Thickness e inches	Standard Sheet Size		Per Cent Open Area	U.S. Std. Gauge Steel Used
	Black	Galv.					width	length		
Carbon Steel EXPAND-X										
¼"—No. 20	94	131	.26 x1.0	.125x .687	.036x.076	.125	4′	8′	40	20
¼"—No. 18	117	159	.26 x1.0	.125x .687	.047x.076	.125	4′	8′	40	18
½"—No. 40	40	60	.497x1.195	.406x .937	.047x.050	.110	4′	8′	83	18
½"—No. 20	43	59	.459x1.195	.375x .875	.036x.066	.134	4′	8′	71	20
½"—No. 18	70	84	.507x1.195	.375x .950	.047x.089	.161	4′ & 6′	8′ & 10′	65	18
½"—No. 16	87	104	.507x1.195	.375x .890	.059x.089	.159	4′ & 6′	8′	65	16
½"—No. 13	146	175	.503x1.2	.350x .900	.089x.098	.199	4′ & 6′6"	8′	61	13
¾"—No. 34	34	51	.865x2.0	.750x1.688	.059x.060	.129	4′	8′	85	16
¾"—No. 16	54	65	.880x2.0	.700x1.640	.059x.095	.183	4′; 6′6"	8′ & 10′; 8′	76	16
¾"—No. 13	80	93	.880x2.0	.734x1.640	.089x.095	.185	4′ & 6′	8′ & 10′	76	13
¾"—No. 10	119	133	.889x2.0	.675x1.563	.089x.141	.277	4′	8′	69	13
¾"—No. 9	180	202	.857x2.0	.600x1.45	.134x.137	.290	4′ & 6′	8′ & 10′	68	10
1" —No. 16	47	55	1.01 x2.375	875x1.937	.059x.095	.196	4′	8′	82	16
1½"—No. 16	40	47	1.35 x3.125	1.180x2.813	.059x.112	.210	4′	8′	85	16
1½"—No. 13	60	68	1.35 x3.125	1.200x2.688	.089x.112	.213	4′ & 6′	8′ & 10′	85	13
1½"—No. 10	79	87	1.33 x3.00	1.156x2.52	.089x.140	.248	4′ & 6′	8′ & 10′	81	13
1½"—No. 9	119	129	1.33 x3.00	1.140x2.43	.134x.141	.289	4′ & 6′	8′ & 10′	76	10
1½"—No. 6	250	273	1.33 x3.00	1.000x2.312	.198x.203	.410	6′	12′	70	6
Carbon Steel FLATTENED EXPAND-X										
¼"—No. 20	87	125	.26 x1.03	.088x .70	.031x.086	.031	4′	8′	34	20
¼"—No. 18	113	159	.26 x1.03	.088x .70	.042x.086	.042	4′	8′	34	18
½"—No. 40	39	60	.497x1.23	.371x1.00	.038x.063	.038	4′	8′	75	18
½"—No. 20	41	42	.438x1.25	.313x .938	.032x.070	.032	3′ & 4′	8′	64	20
½"—No. 18	66	88	.507x1.26	.289x1.00	.038x.109	.038	3′ & 4′	8′ & 10′	58	18
½"—No. 16	82	112	.507x1.26	.301x1.00	.050x.103	.050	3′ & 4′	8′ & 10′	60	16
½"—No. 13	138	175	.503x1.26	.259x .97	.070x.122	.070	3′ & 4′	8′	52	13
¾"—No. 34	32	51	.865x2.10	.709x1.75	.045x.078	.045	4′	8′	83	16
¾"—No. 16	51	71	.880x2.10	.650x1.75	.048x.115	.048	3′ & 4′	8′ & 10′	74	16
¾"—No. 14	68	70	.880x2.10	.642x1.75	.063x.119	.063	3′ & 4′	8′	73	14
¾"—No. 13	76	93	.880x2.10	.642x1.75	.070x.119	.070	3′ & 4′	8′ & 10′	73	13
¾"—No. 9	171	195	.857x2.10	.529x1.63	.110x.164	.110	3′ & 4′	8′ & 10′	62	10
1" —No. 16	46	55	1.01 x2.50	.780x2.06	.048x.115	.048	3′ & 4′	8′	78	16
1½"—No. 16 (Lt.)	29	40	1.35 x3.25	1.14 x2.88	.048x.103	.048	3′ & 4′	8′	85	16
1½"—No. 16 (Hvy.)	38	44	1.35 x3.19	1.13 x2.69	.048x.123	.048	3′ & 4′	8′	85	16
1½"—No. 14	53	63	1.35 x3.28	1.07 x2.88	.063x.138	.063	3′ & 4′	8′	80	14
1½"—No. 13	57	68	1.35 x3.28	1.07 x2.88	.070x.138	.070	3′ & 4′	8′ & 10′	80	13
1½"—No. 9	113	129	1.35 x3.25	1.00 x2.62	.106x.175	.106	3′ & 4′	8′ & 10′	74	10
Stainless Steel EXPAND-X										
½"—No. 18	73	....	.475x1.20	.359x .906	.050x.082	.154	3′ & 4′	8′	65	18
½"—No. 16	91	....	.475x1.20	.359x .875	.062x.082	.161	3′ & 4′	8′	65	16
¾"—No. 18	48	....	.828x2.00	.719x1.656	.050x.096	.176	3′ & 4′	8′	77	18
¾"—No. 16	60	....	.828x2.00	.672x1.656	.062x.096	.178	3′ & 4′	8′	77	16
¾"—No. 13	91	....	.828x2.00	.672x1.563	.093x.096	.192	3′ & 4′	8′	77	13
¾"—No. 9	205	....	.828x2.00	.500x1.375	.140x.144	.294	3′ & 4′	8′	65	10
1½"—No. 16	45	....	1.333x3.00	1.180x2.813	.062x.115	.296	3′ & 4′	8′	83	16
1½"—No. 13	68	....	1.333x3.00	1.156x2.640	.093x.115	.221	3′ & 4′	8′	83	13
1½"—No. 9	137	....	1.333x3.00	1.125x2.500	.140x.154	.267	3′ & 4′	8′	77	10
Stainless Steel FLATTENED EXPAND-X										
½"—No. 18	69	....	.475x1.26	.297x1.031	.042x.093	.042	3′ & 4′	8′	61	18
½"—No. 16	86	....	.475x1.26	.297x1.031	.052x.093	.052	3′ & 4′	8′	61	16
¾"—No. 18	46	....	.828x2.10	.656x1.813	.042x1.08	.042	3′ & 4′	8′	74	18
¾"—No. 16	57	....	.828x2.10	.672x1.813	.052x.108	.052	3′ & 4′	8′	74	16
¾"—No. 13	88	....	.828x2.10	.578x1.781	.079x.108	.079	3′ & 4′	8′	74	13
¾"—No. 9	198	....	.828x2.10	.500x1.563	.119x.160	.119	3′ & 4′	8′	61	10
1½"—No. 16	43	....	1.333x3.15	1.031x2.875	.052x.124	.052	3′ & 4′	8′	81	16
1½"—No. 13	66	....	1.333x3.15	1.016x2.525	.079x.124	.079	3′ & 4′	8′	81	13
1½"—No. 9	133	....	1.333x3.15	.906x2.658	.119x.165	.119	3′ & 4′	8′	75	10

NOTE—All dimensions and weights are approximate

Aluminum EXPAND-X

Styles Available	Wt. Lbs. C Sq. Ft.	Diamond Size a x b inches	Opening Size f x g inches	Strand c x d inches	Overall Thickness e inches	Standard Sheet Size width	Standard Sheet Size length	Per Cent Open Area	B & S Gauge No.	Equivalent Thickness In Steel (USS Gauge No.)
½″—No. .051	27	.507x1.195	.375x .950	.051x.089	.152	3′ & 4′	8′	65	16	18
½″—No. .081	44	.507x1.195	.375x .890	.081x.089	.178	3′ & 4′	8′	65	12	14
¾″—No. .051	17	.880x2.000	.700x1.640	.051x.095	.192	3′ & 4′	8′	78	16	18
¾″—No. .081 (Lt.)	32	.880x2.000	.700x1.640	.081x.095	.211	3′ & 4′	8′	78	12	14
¾″—No. .081 (Hvy.)	41	.880x2.000	.734x1.640	.081x.141	.270	3′ & 4′	8′	68	12	14
¾″—No. .125	65	.889x2.000	.675x1.563	.125x.141	.292	3′ & 4′	8′	68	8	11
1½″—No. .081	22	1.350x3.000	1.200x2.563	.081x.112	.226	3′ & 4′	8′	83	12	14
1½″—No. .125	43	1.330x3.000	1.140x2.500	.125x.141	.269	3′ & 4′	8′	79	8	11

Aluminum FLATTENED EXPAND-X

Styles Available	Wt. Lbs. C Sq. Ft.	Diamond Size a x b inches	Opening Size f x g inches	Strand c x d inches	Overall Thickness e inches	Standard Sheet Size width	Standard Sheet Size length	Per Cent Open Area	B & S Gauge No.	Equivalent Thickness In Steel (USS Gauge No.)
½″—No. .051	25	.509x1.250	.328x1.000	.045x.091	.045	3′ & 4′	8′	64	16	18
½″—No. .081	41	.525x1.271	.297x1.000	.067x.103	.067	3′ & 4′	8′	59	12	14
¾″—No. .051	16	.893x2.125	.625x1.750	.040x.104	.040	3′ & 4′	8′	76	16	18
¾″—No. .081 (Lt.)	30	.893x2.125	.635x1.750	.070x.120	.070	3′ & 4′	8′	72	12	14
¾″—No. .081 (Hvy.)	38	.893x2.125	.547x1.750	.070x.165	.070	3′ & 4′	8′	63	12	14
¾″—No. .125	61	.906x2.156	.563x1.750	.095x.163	.095	3′ & 4′	8′	63	8	11
1½″—No. .081	20	1.375x3.125	1.094x2.625	.055x.144	.055	3′ & 4′	8′	77	12	14
1½″—No. .125	40	1.313x3.125	.938x2.625	.080x.194	.080	3′ & 4′	8′	70	8	11

AVAILABLE METALS

CARBON STEEL

Units are formed from soft open hearth steel sheets.

Finishes—Carbon steel EXPAND-X and Flattened EXPAND-X Expanded Metal is shipped unpainted and without special finishes. EXPAND-X will take most any type of coating. Nickel, chrome, copper, or vacuum plating; porcelain enameling or a good paint job can be given to this material because it has a smooth surface and is readily adapted to high grade finishing. Both EXPAND-X and Flattened EXPAND-X can be rubber coated either by the anodic process or by dipping.

STAINLESS STEEL

Units are formed from alloy Type 304, 18-8 (18 chrome, 8 nickel) austenitic stainless sheets. Certain other alloy types of expanded stainless steel can be furnished upon request.

Finish—Shipped unbuffed and unpolished.

ALUMINUM

Units are formed from aluminum alloy type 3003-H14. While other alloy types may be adaptable to expanding, 3003-H14 was found to be best suited to the expanding operation, and was also chosen because of its wide utility, high corrosion resistance, adequate strength, and low cost. Units formed from this alloy can be either anodized or porcelain enameled.

Finish—Shipped unbuffed and unpolished.

ORDERING INFORMATION

Style—The style numbers designated the various meshes. The first figure is the nominal width of the diamond. The second figure identifies the style. In some cases, this figure corresponds with the gauge of the sheet before expanding. Specify regular or flattened sheets.

Specifying Sheet Size

Width—The width of the sheet is measured the *short way of the diamond* (SWD).

Length—The length of the sheet is measured the *long way of the diamond* (LWD).

When ordering expanded metal specify "SWD" and "LWD" after the width and length of the sheet. Give width of the sheet first.

Example: A sheet 36″ the short way of the diamond by 96″ the long way of the diamond should be written.—

36″ SWD x 96″ LWD

(Note SWD dimension is given first)

TYPES OF SHEARING AVAILABLE

SIDE SHEARING—(Parallel to long dimension of diamond.)

Random (Type "A") Shearing—Cut to width (SWD) specified, with tolerance of plus or minus 1/16″. This type of shearing will usually leave jagged edges.

Bond (Type "AA") Shearing—Cut on center line of first bond *over* specified width. Tolerance, minus 0, plus ½ diamond.

Limitations: Bond shearing cannot be furnished on meshes smaller than ½″ nor on ½″ No. 40 or ¾″ No. 34 EXPAND-X or Flattened EXPAND-X.

Sizing—(Flattened EXPAND-X only). Sizing is an operation that provides Bond shearing, and stretching to a specified width (SWD). Limited to ¾″ and 1½″ meshes in carbon steel only, not heavier than No. 13 gauge. All orders for sized Flattened EXPAND-X subject to our ability to produce. Sizing tolerance is plus or minus 1/16″.

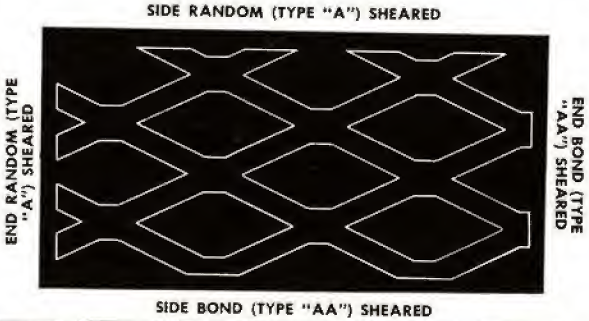
END SHEARING—(Parallel to short dimension of diamond.)

Random (Type "A") Shearing—Cut to length (LWD) specified, with tolerance of plus or minus 1/16″. This type of shearing will usually leave prongs at both ends.

Bond (Type "A") Shearing—Cut to length (LWD) specified, with tolerance of plus or minus 1/16″. One end to be cut on center line of bond.

Exception: When orders specify bond cutting *both ends*, material will be sheared to nearest bond over specified dimension. Tolerance will be minus 0, plus ½ diamond.

SQUARENESS—Maximum "out of squareness" of all sheared material (when all four sides are sheared), shall not exceed 1/16″ per foot of length.


SIDE RANDOM (TYPE "A") SHEARED
END RANDOM (TYPE "A") SHEARED
END BOND (TYPE "AA") SHEARED
SIDE BOND (TYPE "AA") SHEARED

DECORATIVE EXPANDED METALS

DESCRIPTION

The six decorative patterns of USG Expanded Metal, ARMORWEAVE, FESTOON, CATHEDRAL, WAVELENGTH, RONDO and MIN-X, offer the Architect and Designer countless new design possibilities. These attractive, functional and economical materials are produced in both aluminum and carbon steel.

In manufacture, sheets of metal are slit and cold-drawn into continuous mesh patterns. The strands and bonds of the resulting meshes come to rest at a sharp angle to the original sheet. This makes the expanded mesh more rigid than a solid sheet and gives it a three-dimensional effect which adds texture. USG Expanded Metal in this form is called "Type R". For applications where a smooth surface is desired, a flattened form of each pattern except ARMORWEAVE and 1″ CATHEDRAL is produced by cold-rolling the mesh after expansion. Flattened meshes are designated as "Type F".

NOTE REGARDING POSITIONING: You may wish to rotate the expanded metal 90° or 180° from the positions shown in the adjacent photographs. This will achieve varying effects particularly with styles such as FESTOON, WAVELENGTH *and* CATHEDRAL *and positioning of the mesh should be indicated on your drawings.*

ARMORWEAVE, a sturdy, massive, handsome mesh pattern, is produced in ½″, 1½″ and 4″ styles to adapt to varying proportion requirements. Its wide-offset strands and bonds give ARMORWEAVE several unique and valuable properties. Because of them, ARMORWEAVE has excellent shading and concealing power, pleasing depth and texture, and added strength and rigidity. Yet this mesh retains a high percentage of open area for passage of air and usable light. These reasons make ARMORWEAVE an ideal material to use for ventilation panels and grilles in appliances and other consumer goods.

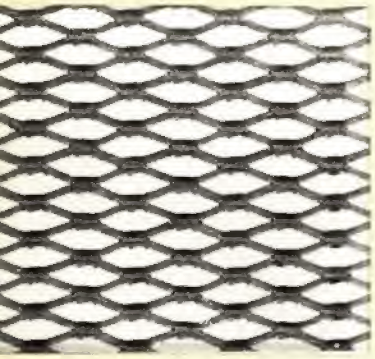
ARMORWEAVE has many potential architectural applications too. Its properties make it a practical, and economical, material to specify for exterior facias and sunshades. ARMORWEAVE placed vertically gives 100% shading at a 45° profile angle. In many cases, initial savings on air-conditioning equipment will more than pay for the entire ARMORWEAVE sunshading installation.

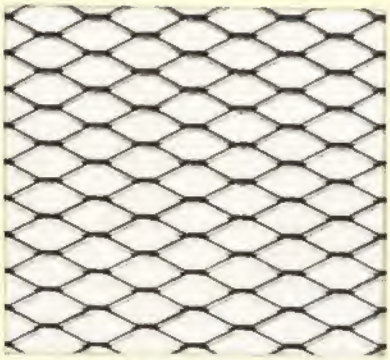
FESTOON, a light, airy mesh pattern with a maximum percentage of open area is also produced in ½″, 1½″ and 4″ styles. Combined with its attractive appearance, these characteristics make it an excellent material to specify for space dividers, decorative grilles, railing guards, etc.

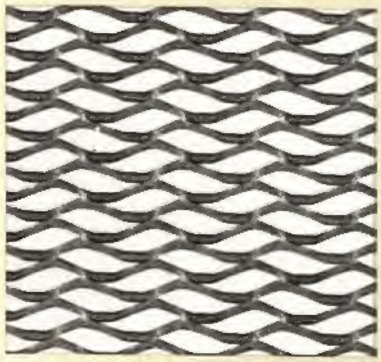
CATHEDRAL, with its long, thin modern lines, may be placed as shown or rotated 90° to provide a horizontal or vertical accent.

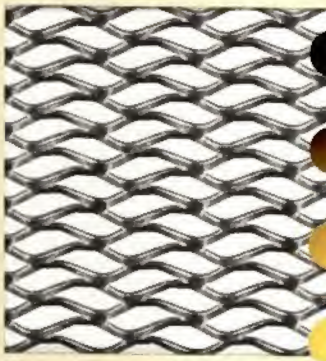
MIN-X, a miniature mesh, is produced in five strand widths to give it a wide range of concealing power. This light-weight mesh is perfect for many grille and ornamental trim applications.

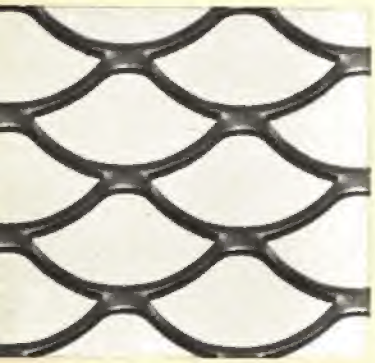
WAVELENGTH & RONDO. The unique and distinctive appearance of these two meshes warrants their consideration for many uses; particularly adaptable as accent points and decorative grilles and railing guards.

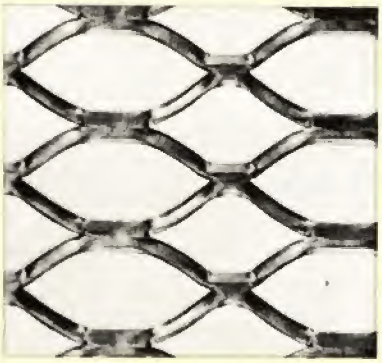

3/16″ MIN-X Type F

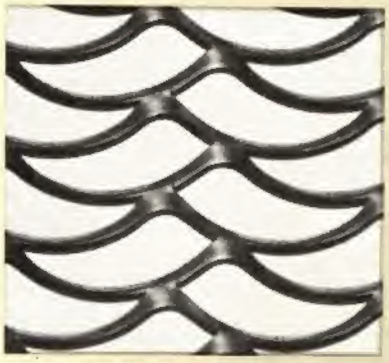

3/16″ MIN-X Type R

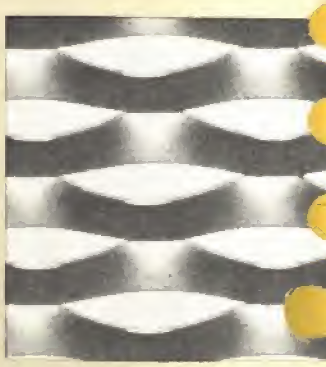

3/16″ WAVELENGTH Type F


3/16″ WAVELENGTH Type R


½″ FESTOON Type R


½″ RONDO Type R


½″ WAVELENGTH Type R


½″ ARMORWEAVE Type R

FUNCTION & UTILITY

Practical, as Well as Beautiful—USG Expanded Metals are lighter, yet more rigid than a solid sheet. They will not ravel when cut, are readily fabricated with standard equipment and techniques, may be framed with standard sections and attached by welding, bolting or riveting.

Typical edging and framing materials and details are shown on Pages 14 and 15.

Finishes Beautifully—The potential of USG Expanded Metal for architectural use is enhanced by the variety of finishes which may be applied to provide appropriate color and also added corrosion resistance. See table of common finishing techniques on page 13.

Provides Opportunity for Design Creativity—The USG Decorative Expanded Metals provide a design motif about which the individual can exercise his personal creativity.

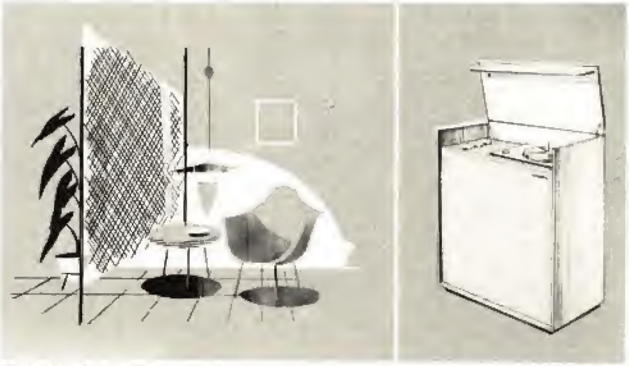
Appropriate Visibility Through the Mesh—A wide range of translucency is afforded by the various mesh designs, yet all retain a high percentage of open area for passage of light and air.

RECOMMENDATIONS & LIMITATIONS

If an aluminum mesh is attached to a steel frame, a gasket of rubber or other non-conductor should be used to prevent galvanic corrosion.

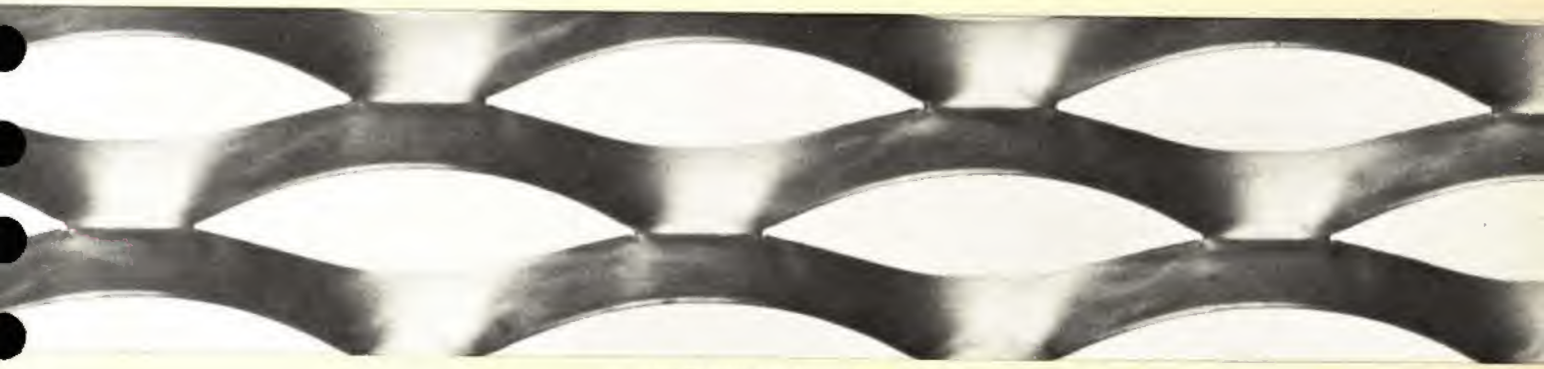
The mesh should be rigidly attached to the framing at approximately 6″ centers.

Bending decorative expanded metal on a very short radius, particularly when repeated, may cause fracturing.

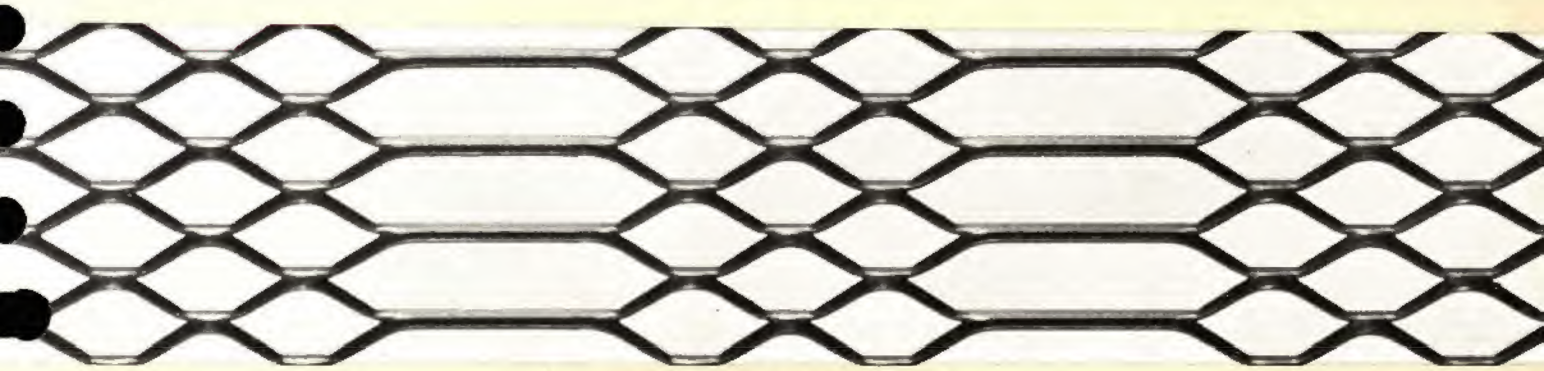


ROOM DIVIDER HI FI GRILLE

SUNSHADE & DECORATIVE FRONT



1½″ ARMORWEAVE Type R

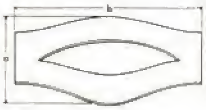
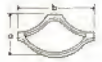
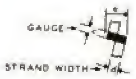
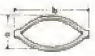
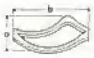
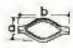


½″ CATHEDRAL Type R

DECORATIVE EXPANDED METAL

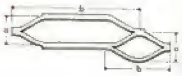
TECHNICAL DATA

(ALL DIMENSIONS AND WEIGHTS ARE APPROXIMATE.) "a" = SWO (Short Way of the Opening.) "b" = LWO (Long Way of the Opening.)

Pattern	Material	Reg. Flat.	Style Designation	Design Size a x b (inches)	Opening Size (inches)	Strand Size c x d (inches)	Overall Thickness e (inches)	Standard Sheet Size		Per Cent Open Area	Wt.—lbs. Per 100 Sq. Ft.
								Width (SWO)	Length (LWO)		
ARMORWEAVE	Carbon Steel	R	½" #20	.6 x1.20	.410x .938	.036x.200	.219	4'	8'	34	100
			½" #18	.6 x1.20	.375x .938	.048x.200	.219	4'	8'	34	133
			½" #16	.6 x1.20	.375x .938	.060x.200	.219	4'	8'	34	166
			*1½" #20 (L)	1.31 x3.00	.69 x2.375	.036x.500	.500	4'	8'	25	113
			*1½" #20 (H)	1.50 x3.00	.625x2.375	.036x.675	.625	4'	8'	10	135
			1½" #18 (L)	1.38 x3.00	.75 x2.375	.048x.500	.563	4' & 6'; 6'	8'; 6'3"	27	146
			1½" #18 (H)	1.50 x3.00	.625x2.375	.048x.675	.625	4' & 6'; 6'	8'; 6'3"	10	180
			*1½" #16 (L)	1.38 x3.00	.75 x2.313	.060x.500	.625	4'	8'	27	183
			*1½" #16 (H)	1.50 x3.00	.568x2.313	.060x.675	.750	4'	8'	10	225
			*4" #16	3.44 x8.00	1.625x6.25	.059x1.25	1.187	4'	8' & 10'	30	182
			*4" #13	3.44 x8.00	1.625x6.25	.089x1.25	1.187	4'	8' & 10'	30	273
	Aluminum	R	½" .051	.6 x1.20	.375x .938	.051x.200	.219	4'	8'	34	48
			½" .081	.6 x1.20	.350x .938	.081x.200	.219	4'	8'	34	77
			1½" .051 (L)	1.270x3.00	.563x2.125	.051x.500	.500	4' & 6'; 6'	8'; 6'3"	21	59
			1½" .051 (H)	1.50 x3.00	.625x2.125	.051x.675	.625	4' & 6'; 6'	8'; 6'3"	10	65
			1½" .081 (L)	1.297x3.00	.563x2.125	.081x.500	.625	4' & 6'; 6'	8'; 6'3"	23	89
			1½" .081 (H)	1.50 x3.00	.438x2.125	.081x.675	.750	4' & 6'; 6'	8'; 6'3"	10	104
			*4" .081	3.0 x8.00	1.25 x6.00	.081x1.25	1.187	4'	8' & 10'	20	96
FESTOON	Carbon Steel	R	½" #20	.625x1.20	.507x .938	.036x.090	.175	4'	8'	71	43
			½" #18	.625x1.20	.500x .938	.048x.090	.175	4'	8'	71	58
			*½" #16	.625x1.20	.500x .938	.060x.090	.175	4'	8'	71	72
			*1½" #16	1.50 x3.00	1.375x2.625	.060x.112	.217	4'	8'	85	37
			*1½" #13	1.50 x3.00	1.313x2.625	.089x.112	.236	4'	8'	81	56
			*1½" #9	1.50 x3.00	1.25 x2.50	.135x.141	.292	4'	8'	81	110
			*4" #9	3.75 x8.00	3.50 x7.25	.134x.230	.500	4'	8' & 10'	90	68
			*4" #4	3.75 x8.00	3.375x7.0	.223x.230	.500	4'	8' & 10'	88	114
		F	½" #20	.688x1.20	.550x1.00	.030x.100	.030	8'	4'	64	39
			½" #18	.688x1.20	.540x1.00	.040x.100	.040	8'	4'	64	52
			*½" #16	.688x1.20	.540x1.00	.051x.100	.051	8'	4'	64	65
			*1½" #16	1.688x3.00	1.438x2.625	.052x.125	.052	8'	4'	79	34
			*1½" #13	1.688x3.00	1.438x2.625	.071x.140	.071	8'	4'	81	51
			*1½" #9	1.75 x3.00	1.25 x2.50	.110x.240	.110	8'	4'	75	101
Typical Type-R Bond Cross Section	Aluminum	R	½" .051	.625x1.20	.507x .938	.051x.090	.175	4'	8'	71	21
			*½" .081	.625x1.20	.467x .938	.081x.090	.175	4'	8'	71	33
 			*1½" .081	1.375x3.00	1.25 x2.625	.081x.112	.250	4'	8'	83	19
			*1½" .125	1.50 x3.00	1.25 x2.563	.125x.141	.250	4'	8'	81	34
			*4" .250	3.375x8.00	3.0 x6.75	.250x.356	.625	4'	8' & 10'	82	76
		F	½" .051	.688x1.20	.550x1.00	.043x.100	.043	8'	4'	64	19
			*½" .081	.688x1.20	.580x1.00	.069x.100	.069	8'	4'	64	30
			*1½" .081	1.75 x3.00	1.375x2.625	.065x.160	.065	8'	4'	74	17
			*1½" .125	1.75 x3.00	1.375x2.563	.100x.190	.100	8'	4'	70	31
RONDO	Carbon Steel	R	½" #20	.520x1.195	.469x .938	.036x.089	.163	4'	8'	65	25
			½" #18	.520x1.195	.438x .938	.048x.089	.163	4'	8'	65	71
			*½" #16	.520x1.195	.438x .938	.060x.089	.163	4'	8'	65	86
		F	½" #20	.625x1.195	.500x .938	.030x.100	.030	8'	4'	59	47
			½" #18	.625x1.195	.438x .938	.040x.100	.040	8'	4'	59	64
			*½" #16	.625x1.195	.469x .938	.051x.100	.051	8'	4'	59	78
	Aluminum	R	½" .051	.520x1.195	.438x .938	.051x.089	.163	4'	8'	65	25
			*½" .081	.520x1.195	.408x .938	.081x.089	.163	4'	8'	65	40
		F	½" .051	.625x1.195	.500x .938	.043x.100	.043	8'	4'	59	23
			*½" .081	.625x1.195	.475x .938	.069x.100	.069	8'	4'	59	36
WAVELENGTH	Carbon Steel	R	*½" #20	.555x1.20	.468x .938	.036x.103	.171	4'	8'	63	55
			½" #18	.555x1.20	.438x .938	.048x.103	.171	4'	8'	63	74
			*½" #16	.555x1.20	.438x .938	.060x.103	.171	4'	8'	63	92
			*3/16" #24	.200x .500	.094x .344	.050x.024	.080	3'	8'	50	50
			*3/16" #22	.200x .500	.094x .344	.050x.030	.088	3'	8'	50	62
		F	*½" #20	.625x1.20	.500x .938	.030x.112	.112	8'	4'	57	50
			½" #18	.625x1.20	.375x .938	.040x.112	.112	8'	4'	57	67
			*½" #16	.625x1.20	.375x .938	.051x.112	.112	8'	4'	57	83
			*3/16" #24	.200x .525	.090x .375	.056x.022	.022	3'	8'	47	45
			*3/16" #22	.200x .525	.090x .375	.056x.026	.026	3'	8'	47	56
	Aluminum	R	½" .051	.555x1.20	.438x .938	.051x.103	.171	4'	8'	63	27
			*½" .081	.555x1.20	.410x .938	.081x.103	.171	4'	8'	63	43
		F	½" .051	.625x1.20	.500x .938	.043x.112	.112	8'	4'	57	25
			*½" .081	.625x1.20	.475x .938	.068x.112	.112	8'	4'	57	39
MIN-X	Carbon Steel	R	*3/16" #24,.034 Strand	.188x .500	.156x .344	.024x.034	.065	3'	8'	71	36
			3/16" #22,.034 Strand	.188x .500	.156x .344	.030x.034	.070	3'	8'	71	45
		F	*3/16" #24,.034 Strand	.188x .525	.125x .390	.022x.038	.022	3'	8'	65	35
			*3/16" #22,.034 Strand	.188x .525	.130x .390	.028x.038	.028	3'	8'	65	43
			MIN-X is produced in .050", .060", .070" and .080" strand widths on special order.								

*Produced on special order. (H) = Heavy Strand (L) = Light Strand

TECHNICAL DATA—continued

Pattern	Material	Reg. Flat.	Style Designation	Design Size a x b (inches)		Opening Size (inches)		Strand Size c x d (inches)	Overall Thickness e (inches)	Standard Sheet Size		Per Cent Open Area	Wt.—lbs. Per 100 Sq. Ft.
				SHORT	LONG	SHORT	LONG			Width (SWO)	Length (LWO)		
CATHEDRAL 	Carbon Steel	R	½" #20	.458x1.0	.458x2.0	.344x.75	.344x1.75	.036x.089	.175	4′	8′	61	58
			½" #18	.458x1.0	.458x2.0	.344x.75	.344x1.75	.048x.089	.175	4′	8′	61	77
			½" #16	.458x1.0	.458x2.0	.344x.75	.344x1.75	.060x.089	.175	4′	8′	61	97
			*1" #16	1.0x2.0	1.0x4.0	.750x1.5	.750x3.5	.0625x.200	.343	4′	8′	75	105
		F	½" #20	.534x1.0	.534x2.0	.344x.75	.344x1.75	.033x.092	.033	8′	4′	58	53
			½" #18	.540x1.0	.540x2.0	.344x.75	.344x1.75	.044x.092	.044	8′	4′	58	70
			½" #16	.562x1.0	.562x2.0	.344x.75	.344x1.75	.052x.092	.052	8′	4′	58	89
	Aluminum	R	½" .051	.458x1.0	.458x2.0	.344x.75	.344x1.75	.051x.089	.175	4′	8′	61	28
			½" .081	.458x1.0	.458x2.0	.344x.75	.344x1.75	.081x.089	.175	4′	8′	61	45
			*1" .081	1.0x2.0	1.0x4.0	.750x1.5	.750x3.5	.081x.200	.343	4′	8′	75	46
		F	½" .051	.562x1.0	.562x2.0	.344x.75	.344x1.75	.046x.095	.046	8′	4′	58	26
			½" .081	.562x1.0	.562x2.0	.313x.75	.313x1.75	.068x.100	.068	8′	4′	58	41

*Produced on special order.

AVAILABLE METALS

CARBON STEEL units are formed from soft open hearth steel sheets.

Finishes—Carbon steel decorative expanded metal Type R and Type F is shipped unpainted and without special finishes. Decorative expanded metal will take most any type of coating. Nickel, chrome, copper, or vacuum plating; porcelain enameling; or a good paint job can be given to this material because it has a smooth surface and is readily adapted to high grade finishing. Both Type F and Type R decorative expanded metals can be rubber coated either by the anodic process or by dipping.

ALUMINUM units are formed from aluminum alloy type 3003-H14. While other alloy types may be adaptable to expanding, 3003-H14 was found to be best suited to the expanding operation, and was also chosen because of its wide utility, high corrosion resistance, adequate strength, and low cost. Units formed from this alloy can be either anodized or porcelain enameled.

Finish—Shipped unbuffed and unpolished.

ORDERING INFORMATION

Terminology

Type R. Regular decorative expanded metal

Type F. Cross-rolled Flattened expanded decorative metal

Sheet Sizes

Type R: 4′ Short Way Opening (SWO) x 8′ Long Way Opening (LWO)

Type F: 9′ Short Way Opening (SWO) x 4′ Long Way Opening (LWO) (See below)

Type F is shipped in untrimmed sheets unless otherwise specified. Customer will be charge for 8′ x 4′ area but will receive oversize sheets with up to 1″ camber. (Length of Type F untrimmed sheets; up to 4″ longer in 8′ dimensions.)

Where specifically requested, Type F may be furnished Random (Type "A") sheared to 8′ x 4′. (Random shearing usually leaves prongs along both 8′ sides of the sheet.)

TYPES OF SHEARING AVAILABLE

(Refer to shearing diagram page 7)

SIDE SHEARING—(Parallel to long dimension of opening.)

Random (Type "A") Shearing—Cut to width (SWO) specified, with tolerance of plus or minus 1/16″. This type of shearing will usually leave jagged edges.

Bond (Type "AA") Shearing—Cut on center line of first bond over specified width. Tolerance, minus 0, plus ½ diamond.

Limitations: AA shearing cannot be furnished on Type F decorative expanded metal.

END SHEARING—(Parallel to short dimension of opening.)

Random (Type "A") Shearing—Cut to length (LWO) specified, with tolerance of plus or minus 1/16″. This type of shearing will usually leave prongs at both ends.

Bond (Type "AA") Shearing—Cut to length (LWO) specified, with tolerance of plus or minus 1/16″. One end to be cut on center line of bond. Available on Type R only.

SQUARENESS—Maximum "out of squareness" of all sheared material (when all four sides are sheared), shall not exceed 1/16″ per foot of length.

ARCHITECTURAL SPECIFICATION:

SCOPE: The Contractor shall supply all labor, material and equipment to install the specified pattern of USG Expanded Metal in all areas where shown on the drawings.

MATERIALS: Expanded Metal pattern used shall be (specify by complete style designation). (Example: 1½″ .081 USG Aluminum ARMORWEAVE Expanded Metal—Type "R".) The Contractor should be advised if finish on the Expanded Metal is required, i.e., anodized, etc.

EXPANDED METALS IN EXTERIOR USES

SUNSHADING

Sunshading of glass areas has become increasingly important to architects because of its effect on air conditioning costs. Today's buildings are being designed with as much as three times the glass area of those in the 1920's. Tripling of the transparent area approximately doubles the cooling load on air conditioning equipment.

One of the ways of controlling and reducing air conditioning loads is with an exterior shading device which acts as a barrier to the heat of the sun's rays. Because of its wide strand ARMORWEAVE Decorative Expanded Metal is ideally suited for sunshading as a horizontal overhang, vertical screen or entire building facia.

Shading Characteristics Of Armorweave

In the summer, the sun is higher in the sky than it is in winter. A well-designed shading device will keep out the heat of the summer sun and yet not interrupt the welcome heat of the winter sun.

ARMORWEAVE provides protection from the summer sun's rays at peak conditions and throughout the cooling season. It also allows sunlight to pass, during the winter months.

The several styles of ARMORWEAVE available, give architects a choice of materials to meet various sunshading requirements. ½" and 1½" (L) ARMORWEAVE placed vertically give 100% shading at a 45° profile angle. For more critical sunshading requirements, 1½" (H) ARMORWEAVE—a heavier strand material created especially for use as a sunshade—gives 100% shading at a 36° profile angle.

The table below shows shading percentages of ARMORWEAVE placed vertically for various profile angles of the sun. The profile angle defines many positions of the sun (see definition below) and, therefore, has been chosen as a reference.

(The slope of the bond in the ARMORWEAVE is down and toward the sun, to provide maximum shading and these results.)

Shading

Percent Shading—Armorweave	Profile Angle—Degrees						
	0	10	20	30	36	40	45
½" and 1½" (L) Styles	63	71	79	87	—	96	100
1½" (H) Styles	73	81	88	95	100	100	100

(L)—Light Strands (H) Heavy Strands

PROFILE ANGLE—The angle through which a horizontal plane must be rotated about a horizontal axis located in the plane of the ARMORWEAVE *Expanded Metal in order to include the position of the sun. The profile angle, sometimes called the shadow angle, is used on sectional drawings to calculate the positions and dimensions of shading devices.*

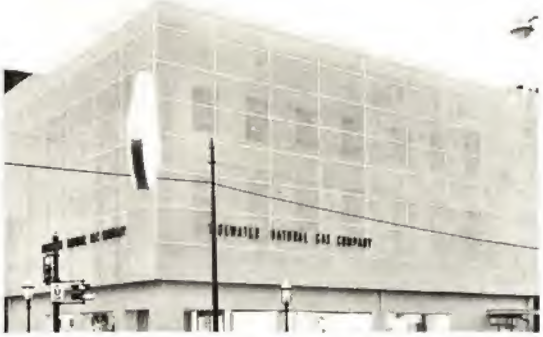
Advantages Of Armorweave As A Sunshade

ARMORWEAVE is an efficient and practical "sunshading" material. This versatile expanded metal shuts out unwanted glare—and heat—by shading the openings in wall areas, yet permits passage of needed light, as well as air. Screening out heat increases comfort indoors, substantially lowers air conditioning costs. While cutting down on the heat of the summer sun, it does not minimize the warmth of the winter sun.

ARMORWEAVE used as a sunshade gives nearly 180° of horizontal outlook and still affords desirable privacy from the stares of passersby to those inside the building.

Architects can create their own designs and effects with this expanded metal, as it can be adapted to most modules. It is right in line with the trend to decorative grillwork. Easily fabricated to standard lightweight steel or aluminum framing sections, ARMORWEAVE with ordinary proper attachments, is sufficiently strong to perform satisfactorily under the severest wind conditions.

BEFORE Remodeling



AFTER Remodeling with USG Armorweave Expanded Metal

ARMORWEAVE is all in one piece and has no moving parts to rely upon for effectiveness. It is relatively maintenance free when finished with porcelain enamel, anodized or plastic coatings for full weather protection.

A technical pamphlet entitled "ARMORWEAVE *for Sunshading*" *is available from U.S.G. Sales Offices should more information on this subject be required.*

WIND LOAD TESTS ON ARMORWEAVE

In August 1958, wind tunnel tests of ARMORWEAVE expanded metal panels were conducted by the University of Wichita, Department of Engineering Research, Wichita, Kansas. The tests were conducted on 4' x 4' panels of ½"—18 and 1½"—18 carbon steel ARMORWEAVE.

The results of these tests showed that, with ordinary proper attachments, 1½" -18 ARMORWEAVE when used on the exterior of buildings will perform satisfactorily under the most severe wind conditions. Furthermore, vibrations noticed during the tests were inconsequential and would not cause fatigue of the ARMORWEAVE nor a gross increase in the stress due to resonance.

Comparison With Flat Plate

The tests showed the normal load on 1½"—18 ARMORWEAVE is no greater than 55% of the normal load on a solid flat plate. The tests also indicated the normal load on ½"—18 ARMORWEAVE is equal to the 1½" style.

Because of the airfoil design of ARMORWEAVE, similar to an upside down airplane wing, a downward force results from a wind load condition. This downward force varies from 7.7 lb. per sq. ft. (of ARMORWEAVE) for a 71 mph. wind, to 20.0 lb. per sq. ft. for a 112 mph. wind.

The small numerical value of the side force makes it negligible.

For more specific information on the wind loading of ARMORWEAVE, contact the U.S.G. Sales Office and ask for the technical pamphlet entitled "Data and Application of the Wichita Wind Load Tests".

The background design is a full size projection of 4" ARMORWEAVE.

FINISHES

The increasing use of USG Expanded Metals in architecture, interior decoration and product design is due in part to its adaptability to metal finishing processes which add appropriate color and extra corrosion resistance to the native attractiveness of the meshes.

USG Expanded Metals are regularly produced by expanding sheets of aluminum alloy 3003 H-14 or mild open-hearth scale free, low carbon steel, or type 304 stainless steel. Most finishes, adaptable to these metals can be applied to their expanded form.

Anodized Finishes

Aluminum owes its corrosion resistance to a natural oxide coating which protects the metal. Alloy 3003 used in USG Aluminum Expanded Metal is one of the most corrosion resistant commercial alloys. However, since aluminum may weather on long exposure, and is subject to attack by certain combinations of sea air, high humidity and industrially contaminated atmospheres, protective surface treatments are often specified.

The most common surface treatments for aluminum are the anodizing processes in which an added oxide coating is formed electrochemically on the metal. This anodic coating is applied by finishers located throughout the country.

Anodic coatings usually decorate as well as protect. The coating is minutely porous when originally formed and may be colored by various dyes and pigments. Subsequent treatment closes the pores, and the color and coating become an integral part of the metal.

The cost and protection afforded by anodic coatings depends largely on their thickness. An .00025" coating is recommended for interior use where minimum abrasion resistance is needed. An .0004" coating is used for interior or maintained exterior applications under medium abrasion conditions. An .0008" coating is recommended for exterior use and has high abrasion resistance.

Alloy 3003 takes anodic films with a permanence and color match within standard commercial limits. However, variations in the alloy and the anodizer's process will effect both permanence and color match.

The Aluminum Company of America has developed a carefully controlled anodizing process, Alcoa—Architectural Color Finish, specifically for unmaintained exterior aluminum. Where all phases of the recommended procedure are followed, this finishing process is designed to give increased weather resistance, a high degree of color permanency and excellent color match.

Alcoa Architectural Color Finishes may be applied only to "Anoclad" or equivalent sheets. These sheets are rolled with a thin clad surface very carefully controlled and tested as to alloying constituents and impurities. The composition of this surface cladding is varied to achieve particular effects. Expanding exposes an edge of base alloy where the clad sheet is cut in the expanding operation. *This may* produce a slight two-tone effect after finishing, which we believe is attractive.

Porcelain Enamel Finishes

Porcelain enamel offers the architect or designer an unlimited variety of colors obtainable with mineral oxides. The colors are permanent and will not fade, peel or deteriorate with age. Building exteriors have long been finished in porcelain enamel because it will successfully withstand severe weather conditions of all kinds.

Porcelain enamel is unaffected by common acid or alcohol found in the home. The glass-like surface of porcelain enamel means it is easily cleaned; resistant to severe abrasion and fire resistant.

Porcelain enamel finishes have a tendency to flake or spall off when they are hit with a hammer or receive a sharp impact. All fabrication such as cutting, drilling, welding or forming of expanded metal panels should be completed before porcelain enameling.

Porcelain enamel finishes can be applied to standard stock sheets of USG Expanded Metal by enamelers located throughout the country. The steel and aluminum alloys used in making USG Expanded Metal have been found by trial to be compatible to porcelain enameling. Contrary to common belief, the porcelain enamel can be applied to completely coat the strands and bonds of the expanded metal, including the sharp corners.

Painting, Plating, Enameling And Plastic Finishes

All USG Expanded Metals are produced from scale-free metal and thus do not present special problems to finishers. Painting is best accomplished with spray or deep nap roller, since the edges and corners of the mesh may be injurious to brushes. The meshes readily adapt to standard methods of applying hot-dip galvanize, electro-plate, and baked enamel finishes. Plastic finishes have been applied successfully by dipping, spraying and surface cladding prior to sheet expansion.

Cleaning

Provision should always be made to clean USG Expanded Metal prior to finishing; and most finishers include this as a standard procedure. The carbon steel styles are shipped lightly oiled by us. A solvent or acid dip followed by water rinsing is a common cleaning method. For smaller projects the expanded metal may be wiped clean with a solvent.

The aluminum styles may also have oily surface deposits picked up during rolling of the sheets by the aluminum producer or from our expanding machines. Because of possible dust accumulation, it is advisable to clean aluminum meshes which are to be erected without additional finishing. Washing with a mild soap, detergent or non-etching chemical cleaner followed by thorough rinsing and drying, or the use of wax base and non-wax base polish cleaners, are two methods recommended by aluminum producers.

FINISHES aluminum

ALLOY	TYPE	EXTERIOR	INTERIOR	REMARKS
3003H-14	Unfinished	X	X	Specify surface cleaning prior to erection.
3003H-14	Painted	X	X	Specify surface cleaning prior to painting.
3003H-14	Interior Anodized		X	Resists mild abrasion. Colors generally available natural, red, blue, green, yellow, gold, silver, copper, brass and black.
3003H-14	Exterior Anodized	X	X	Higher abrasion resistance.
3003H-14	Heavy Duty Anodized	X	X	Highest abrasion resistance and resistance to attack by combinations of sea air, humidity and industrially contaminated atmospheres.
3003H-14	Porcelain Enameled	X	X	
6061-0	Porcelain Enameled	X	X	Better structural properties after firing. This alloy expanded on special order only.
	carbon steel			
	Painted	X	X	Steel used has scale-free surface, but is shipped lightly oiled. Specify cleaning prior to finishing.
	Bonderized & Enameled	X	X	
	Galvanized	X	X	
	Plastic Coated	X	X	
	Porcelain Enameled	X	X	Produced from low carbon open hearth steel adaptable to this finish.

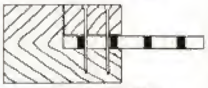
The finishes are generally arranged in ascending order of added initial cost. United States Gypsum does not apply these finishes at our expanded metal plant.

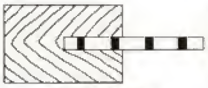
EDGINGS FOR EXPANDED METAL

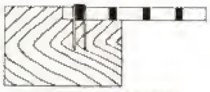
For more effective design and fabrication of products using Expanded Metals, the selection of the proper edging is highly important. Since USG Expanded Metals are readily adapted to various edging materials, the designers choice of edging will usually be governed by the end use of the expanded metal assembly. Shown below is data on various edging materials and how to use them to provide greater flexibility of design, utility, economy and complete safety with USG Expanded Metals.

RIGID

Wood Edging

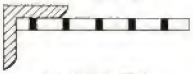

INSERT EDGING

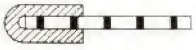

KERFED EDGING

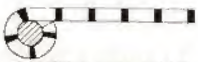

STAPLE APPLICATION

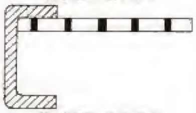
Softwoods are suitable for general utility edgings, however, greater permanence, wearability and beauty are obtained with hardwood edgings. Cost, availability and end use will affect the type of wood used.

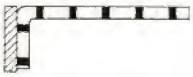
Steel Edging

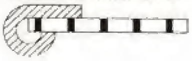

ANGLE EDGING


"U" EDGING


WRAPPING OVER ROUND

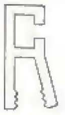

CHANNEL EDGING

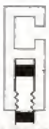

FLAT EDGING

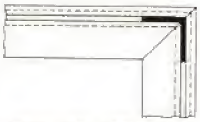

ROLLED EDGING

Steel edgings are popular for their high strength and ease of fabrication. Hot rolled angles, rounds, bars or channels and cold rolled U-edging or other specialty sections are also suitable for edging expanded metal.

Extruded Aluminum Edging

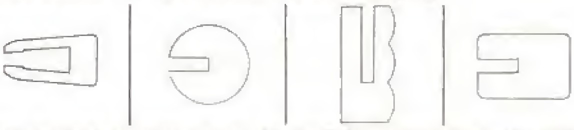

CROSS-SECTION


EXTRUSION EDGING CLOSED


MECHANICAL CORNER KEY

Extruded aluminum edgings are best suited for use with USG Aluminum Expanded Metal and should be selected when light weight, beauty, and extra corrosion resistance are required. Specialty shapes may be designed to serve other functions in addition to edging the expanded metal.

SEMI-RIGID . . . Extruded Plastic Edging



Various types of plastics can be used for extruded plastic edgings where light weight and color are needed and strength is not too important.

FLEXIBLE . . . Liquid Plastic Edging

The edges or the full sheet of USG Expanded Metal can be rubber or plastic coated either by anodic process or by dipping, to provide protection, resistance to abrasion and color.

FUNCTION AND UTILITY

RIGID Edgings are used where structural functions are required of the edging material. Secure attachment of the expanded metal to the edging is possible for greater rigidity of the sheet.

Wood Edgings are easily fabricated with standard hand or woodworking tools. Woods suitable for edgings or specially shaped moldings are available from lumber yards or manufacturers of wood moldings. The corners of frames may be either butted or mitered. The latter joint is best for kerfed and insert edgings. Corner joints are fastened by using an adhesive with reinforcing such as nailing, slip feathering, splining or doweling.

The *insert edging* is used where complete covering of the edge is required and only one finished side is needed. Finishing nails or staples are used to fasten the insert.

The *kerfed edging* presents a neat finished appearance in which either side can be used. The kerf holds the expanded metal in place.

The *staple* method of attaching USG Expanded Metal is the fastest and most economical way to apply a wood edging.

Steel Edgings are readily fabricated with standard metal working and welding equipment. They are available from steel supply warehouses or specialty steel fabricators. Hot rolled shapes are generally suitable for edging. Corners may be bent on rounds, squares and flats used on end, but angles, channels and U-Edging are best joined by coping and mitering. Mitered corner and end joints are usually arc welded but other methods of welding may be used. Excess welding materials should be removed to provide clean smooth joints.

Spotwelding the expanded metal to the edging is one of the fastest and simplest methods used. Arc welding can be done if care is taken not to burn the expanded metal.

Extruded Aluminum Edgings can be fabricated with standard metal cutting or woodworking machinery. They can be painted or anodized to match the expanded metal. Aluminum supply houses stock a wide variety of standard shapes, or special shapes may be obtained from a manufacturer of aluminum extrusions.

Corners are best formed by mitering and welding, brazing or fitting with a mechanical key. The edgings are formed into frames in the same manner as steel edging. Welding the corners and joints improves the strength of the frame but mechanical keys may be used.

In applying the expanded metal to the edging frame, a welded construction is strongest, but mechanical fastening by crimping the edging or fastening with rivets or screws may offer some economies.

SEMI-RIGID Edgings are used where stiffeners and rigidity are required of the edging material and strength is of limited importance.

Extruded Plastic Edgings can be readily fabricated with wood and metal working tools. They may be bent at a low heat, laminated with adhesives and have resistance to abrasions and bending. They can be finished with paint, lacquer or enamel or are available in a wide range of colors. Many shapes are available from plastic extruding companies which make suitable edging shapes, or dies can be developed to make special shapes.

Plastic extrusions are formed by heating, to approximately 180° F. and forming by hand or with male and female dies. They may be cut with band, circular or hand saws and laminated to themselves or other materials with adhesives.

FLEXIBLE Edgings are used as a decorative or protective edging generally on small pieces where strength is obtained through the expanded metal itself. The development and application of plastic edgings and coatings to USG Expanded Metals opens the door to many new uses for this versatile product.

FASTENING & FRAMING DETAILS

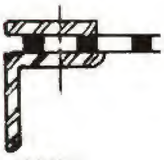
The architectural applications for USG Expanded Metals have increased rapidly since the introduction of USG Decorative Expanded Metal. Produced in both aluminum and steel, these decorative meshes provide a beautiful, functional, and economical material to serve architecturally for exterior sunshades, ornamental grilles, railing guards, space dividers and many other applications.

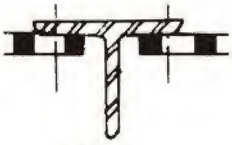
Though USG Expanded Metal is a unique and modern material, it adapts readily to framing sections and fastenings which are common in architectural use. Shown below are a series of typical details for use as a guide to the architect and fabricator.

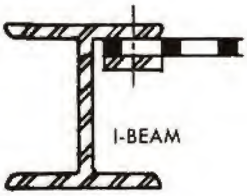
Many hot rolled and cold formed aluminum and steel sections may be used. Examples are shown of typical framings incorporating angles, bars, tees, channels and I-beams. Aluminum extrusions, such as rectangular and square tubing and various types of metal store-front trim, have also found their place as expanded metal framing materials. Shown also are suggestions for grid framing systems for constructing a new facade on an older building. Wood framing methods are shown on Page 14.

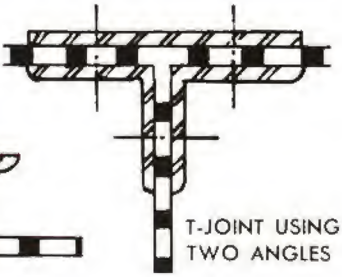
Fastening USG Expanded Metals to the supporting framework may be accomplished with self-tapping or sheet metal screws, fastening directly through the strand or opening in the expanded metal. Pull-through type or self-plugging type blind rivets or drive rivets may also be used. Welding at points where the expanded metal is adjacent to framing is also satisfactory.

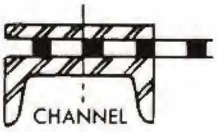
The services of U.S.G. Sales Engineers and Architect Service Representatives are available to give you further information on specific applications. See Page 16 for a listing of U.S.G. Sales Offices.

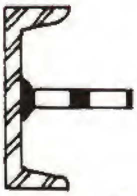

ANGLE

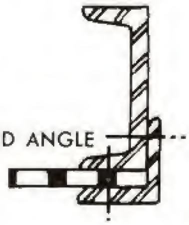

TEE

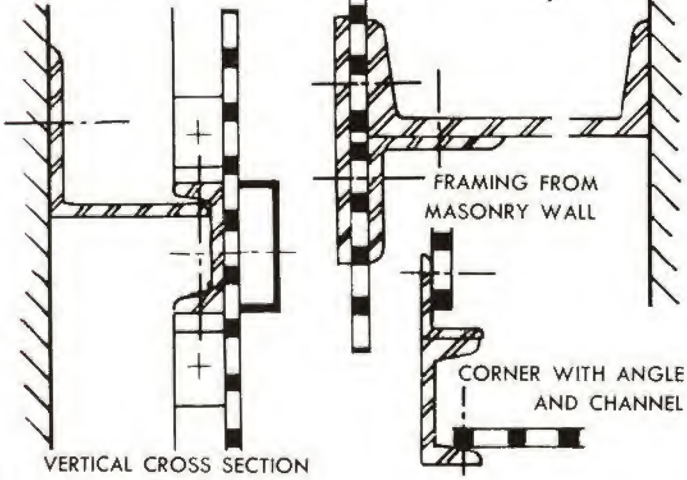

I-BEAM


T-JOINT USING TWO ANGLES


CHANNEL

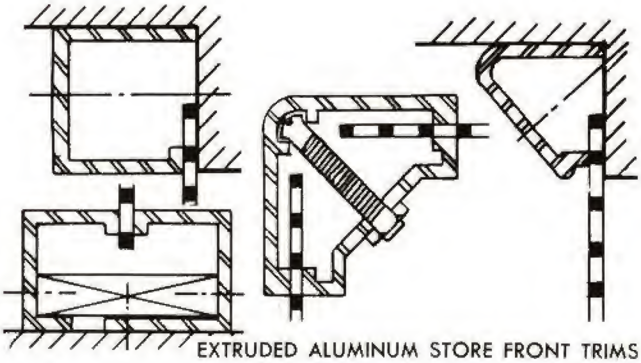

WELD TO CHANNEL WEB

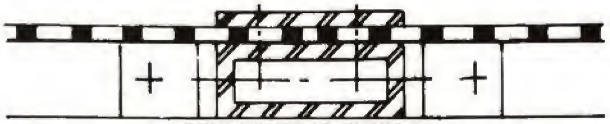

CHANNEL AND ANGLE

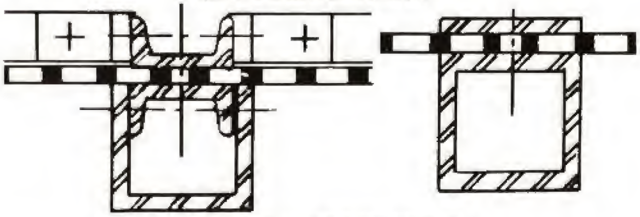

VERTICAL CROSS SECTION

FRAMING FROM MASONRY WALL

CORNER WITH ANGLE AND CHANNEL

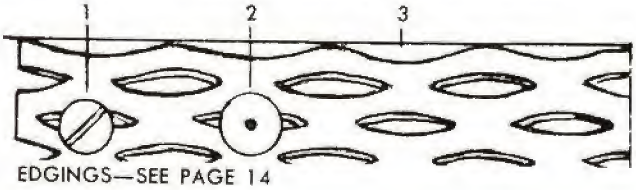

EXTRUDED ALUMINUM STORE FRONT TRIMS


RECTANGULAR TUBING


HORIZONTAL CROSS SECTION

Fastening with screws, rivets, or welding

1. Self tapping or sheet metal screws.
2. Pull-through or self plugging type blind rivet or drive rivets.
3. Weld where expanded metal is adjacent to frame.



EDGINGS—SEE PAGE 14

GRATE-X*
EXPANDED METAL GRATING

For more information on GRATE-X
see our catalog in Sweet's
Architectural File 13a/Un
Industrial Const. File . . 12c/Un
or see the AIA File 15-T, 30-J

GRATE-X is a heavy duty type expanded metal, made of steel plate which is slit and expanded in a cold-drawing operation.

Designed especially for use as light weight open steel flooring. GRATE-X is ideal for flooring, cat walks, platforms, stair treads, etc., where its principal use is for light storage and foot traffic. Many other practical uses are possible.

Economical—A wide selection of sizes and weights is available and its light weight, consistent with high strength makes for a most economical construction.

Extra Safety—The angular ridged surface formed by the multiple junctions of strands provides excellent antislip qualities. The closely-spaced long bond feature of GRATE-X provides greater contact area, resulting in a high traction surface, highly skid-proof yet smooth enough for wheel traffic. Water and oil drain off readily.

PROJECTION MESH is produced with small toothlike projections on the upper surface for maximum anti-skid qualities.

Large Open Area—The angular position of the strands and bonds permits free passage of light and air. Dust cannot accumulate.

GRATE-X TECHNICAL DATA

CARBON STEEL

Style (psf)	Diamond Size Width x Length	Opening Size Width x Length	Strand Size Width x Thickness	Sheet Size Width (SWD) x Length (LWD)
3.0 lb.	1.44" x5.0"	1.09" x3.31"	.23" x.223"	48"* or 72"x60", 96"** or 120"
3.14 lb.	2.00" x6.0"	1.625"x4.875"	.312"x.250"	48" or 72"x120"
4.0 lb.	1.395"x5.0"	1.02" x3.25"	.30" x.223"	48", 60" or 72"x96"** 60"x60" or 120"
4.27 lb.	1.412"x4.0"	1.0" x2.88"	.30" x.250"	48" or 72"x96"
5.0 lb.	1.143"x5.0"	.72" x2.88"	.31" x.223"	48"x60", 96"** or 120"
6.25 lb.	1.412"x5.0"	.781"x3.125"	.38" x284"	48" or 72"x96"**
7.0 lb.	1.333"x5.0"	.70" x2.75"	.40" x.284"	48"x50" or 100"

*This width produced on special order.
**Length shown is nominal, actual length is 97½".

ALUMINUM

2.0 lb.	1.25" x5.0"	.73" x2.88"	.356"x2.50"	60"x60" or 120"

PROJECTION MESH

1.87 lb.	1.125"x5.000"	.875"x3.188"	.187"x.134"	72"x120"

GRATE-X SELECTION GUIDE

Concentrated Load (Lbs. Per Foot of Width-SWD)		SPAN					
		2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	4'-6"
50#	Occasional pedestrian loads (window washers, inspectors, etc.)	3#	3#	4#	5#	7#	7#
100#	Normal pedestrian traffic	3#	4#	5#	7#	7#	
150#	Heavy pedestrian traffic or workmen with light equipment	4#	5#	7#	7#		
200#		5#	7#	7#			
250#		7#	7#				

Aluminum Grate-X is also available in a 2 lb. per square foot weight made from ¼ in. sheet stock.

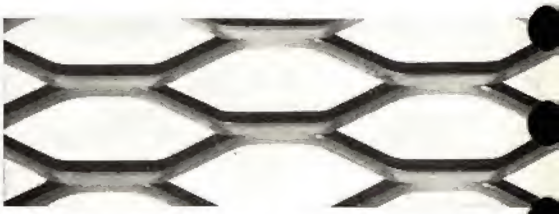
Special Sheet Sizes—In addition to furnishing the standard size sheets listed in the table above, GRATE-X can be furnished sheared to special sizes. Note: It is standard practice to shear GRATE-X on the first bond over the dimension specified, both SWD (Short Way of Diamond) and LWD (Long Way of Diamond).

Prefabricated Grate-X Treads—GRATE-X stair treads have all the advantages of GRATE-X and are ideal for fire escapes and all types of industrial and ship stairways. The treads are completely prefabricated by U. S. G. and shipped to the customer ready for installation. The stair treads are easily installed by a simple attachment with bolts and nuts to standard steel channel stringers. Bolts and nuts for attachment are not furnished with the treads.

Tread lengths are available from 16 in. to 48 in. inclusive, in ½ in. increments. Standard widths are listed in table below.

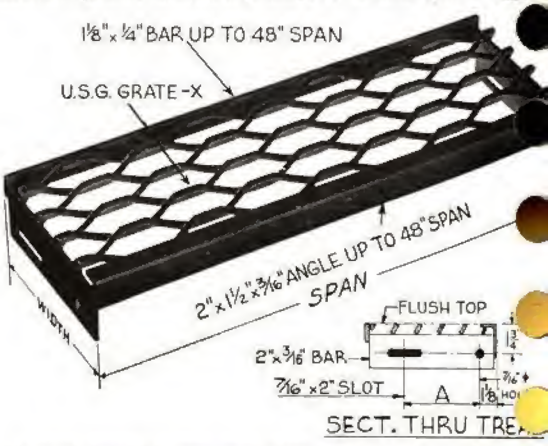
No. 4-A Tread (Made from 4-lb. GRATE-X)	No. 5-A Tread (Made from 5-lb. GRATE-X)	Dimension "A" (See drawing)
5¾"	6¼"	2½"
7⅛"	7⅜"	2½"
8½"	8½"	4½"
9⅞"	9¾"	6"
11¼"	10⅞"	7"

For complete information on GRATE-X and GRATE-X stair treads, ask for our GRATE-X catalog.



4 lb. GRATE-X approximately ⅓ actual size.

GRATE-X permits maximum passage of air and light.



(above) GRATE-X stair tread showing dimensions "A".

*T.M. Reg. U.S. Pat. Off.

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(PROVIDENCE)

A.I.A. File 14-A-I

TECHNICAL INFORMATION

GRATE-X*

EXPANDED METAL GRATING

UNITED STATES GYPSUM

1960

*T.M. Reg. U.S. Pat. Off.

USG UNITED STATES GYPSUM

A.I.A File 14-A-I

GRATE-X*
EXPANDED METAL GRATING

Description

GRATE-X is a heavy duty type expanded metal, made of steel plate which is slit and expanded in a cold-drawing operation. Designed especially for use as a lightweight open steel flooring. GRATE-X is ideal for flooring, cat walks, platforms, stair treads, etc., where its principal use is for light storage and foot traffic. Many other practical uses are possible.

U.S.G. Grate-X is also made from ¼″ aluminum plate for uses where the inherent properties of aluminum are required in addition to the advantages of Grate-X.

Function and Utility

Economical: Its low cost and light weight, combined with high strength, make for a most economical construction. A wide selection of sizes and weights is available.

High Strength: Formed like a truss, every interconnected strand acts as a structural member distributing the load in many directions, over a considerable area. There are no riveted or welded joints.

Easily Installed: The uniform pattern; ease of cutting with torch, bolt cutters or hacksaw; ease of anchorage with spot welding or bolting and ease of shaping to curved surfaces make for quick, easy installation. Holes may be cut or patched, and alterations made at will. Ease of fabrication permits stocking at user's plant for use as needed for alterations, additions, etc.

Extra Safety: The angular ridged surface formed by the multiple junctions of strands provides excellent anti-slip qualities. The closely-spaced long bond feature of GRATE-X provides greater contact area, resulting in a high traction surface, highly skid-proof yet smooth enough for wheel traffic. Snow and ice break off easily under foot, water and oil drain off readily; thus maintaining anti-slip qualities under adverse conditions.

Large Open Area: The angular position of the strands and bonds permits ready passage of light and air. Dust cannot accumulate. The percentage of open area is actually as great at an entrance angle of 45 degrees as at 90 degrees.

Easily Maintained: The angular position of strands and bonds and large open area make GRATE-X virtually self-cleaning. All surfaces can be readily reached for painting with brush or spray gun.

For further details, consult the nearest USG sales office.

GRATE-X allows ready passage of air and light

Specifications

SCOPE: GRATE-X (U. S. G. Expanded Metal Grating), shall be installed for all walkways and other areas where shown on drawings.

Material: GRATE-X shall weigh (specify weight per square foot from Table 2).

(For steel) The steel used in its manufacture shall comply with ASTM designation A-283-46T.

(For aluminum) The aluminum in its manufacture shall be 5052 H-32 alloy of aluminum.

ERECTION: Units of GRATE-X shall be installed with straight edge of bond up. GRATE-X shall be so placed that the direction of the long way of the diamond parallels the direction of the span. Attachment to framing shall be by welding at 6″ intervals. Edges parallel to long way of diamonds shall be butted and welded on every second bond. Individual pieces of GRATE-X shall be placed in such a manner that the diamonds of one piece are aligned with those of adjacent pieces.

"GRATE-X" and "EXPAND-X" are registered trademarks owned by United States Gypsum and identify the particular types of expanded metal manufactured only by United States Gypsum

GRATE-X* STAIR TREADS

GRATE-X stair treads have all the advantages of GRATE-X and are ideal for fire escapes and all types of industrial and ship stairways. The treads are completely prefabricated by U.S.G. and shipped to the customer ready for installation. The stair treads are easily installed by a simple attachment with bolts and nuts to standard steel channel stringers. Bolts and nuts for attachment are not furnished with the treads.

Tread lengths are available from 16 in. to 48 in. inclusive, in ½ in. increments. Standard widths are listed in table on page 3.

*T.M. Reg. U. S. Pat. Off.

TECHNICAL DATA Load Test Data with Deflections in Inches

Table 1

LOADING CONDITION—Concentrated load in lbs. per 12″ of width applied at center of span. Deflections given in inches at center of span are based on tests. Ends of grating rigidly fastened about 6″ on centers.

Carbon Steel (3, 4, 5 and 7 lb.) Grate-X. Data from tests by Armour Research Foundation

LOAD	DEFLECTION IN INCHES . . . CARBON STEEL GRATE-X															
CONCENTRATED LOAD AT CENTER LINE—POUNDS Per 12″ WIDTHS (1)	25″ CLEAR SPAN				30″ CLEAR SPAN				35″ CLEAR SPAN				40″ CLEAR SPAN			
	TYPE OF GRATING				TYPE OF GRATING				TYPE OF GRATING				TYPE OF GRATING			
	3.0 Lb.	4.0 Lb.	5.0 Lb.	7.0 Lb.	3.0 Lb.	4.0 Lb.	5.0 Lb.	7.0 Lb.	3.0 Lb.	4.0 Lb.	5.0 Lb.	7.0 Lb.	3.0 Lb.	4.0 Lb.	5.0 Lb.	7.0 Lb.
50	.060	.040	.037	.011	.086	.061	.048	.031	.147	.088	.068	.051		.119	.089	.062
100	.114	.082	.070	.035	.169	.120	.093	.062		.174	.138	.089		.241	.177	.111
150		.119	.102	.062		.177	.140	.093			.204	.123			.260	.159
200			.134	.079			.181	.117				.155				.205

Carbon Steel (4.27 lb.) and Aluminum (2.0 lb.) Grate-X. Data from USG Research

LOAD	DEFLECTION IN INCHES					
CONCENTRATED LOAD AT CENTER LINE—POUNDS PER 12″ WIDTHS (2)	CARBON STEEL (4.27 lb.) GRATE-X				ALUMINUM (2.0 lb.) GRATE-X	
	CLEAR SPAN				CLEAR SPAN	
	23″	29″	35″	41″	20″	25″
50	.024	.043	.083	.123	.076	.118
100	.050	.095	.156	.232	.153	.237
150	.080	.153	.223		.229	.355
200	.111	.209			.306	

Weights (per square foot) and Dimensions (inches)

Table 2

CARBON STEEL

STYLE (psf)	DIAMOND SIZE WIDTH X LENGTH	OPENING SIZE	STRAND WIDTH	STRAND THICK-NESS	GRATE-X DEPTH	PERCENT OPEN AREA	SHEET SIZE WIDTH (SWD) LENGTH (LWD)
3.0 lb.	1.44 x 5.0	1.09 x 3.31	.23	.223	½	61%	48″ δ or 72″x60″, 96″ γ or 120″
3.14 lb.	2.000 x 6.0	1.625 x 4.875	.312	.250	9⁄16	69%	48″ or 72″x120″
4.0 lb.	1.395 x 5.0	1.02 x 3.25	.30	.223	⅝	54%	48″, 60″ or 72″ x 96″ γ 60″ x 60″ or 120″
4.27 lb.	1.412 x 4.0	1.0 x 2.88	.30	.250	⅝	58%	48″ or 72″ x 96″
5.0 lb.	1.143 x 5.0	.72 x 2.88	.31	.223	⅝	48%	48″ x 60″, 96″γ or 120″
6.25 lb.	1.412 x 5.0	.781 x 3.125	.380	.284	47⁄64	46%	48″ or 72″ x 96″γ
7.0 lb.	1.333 x 5.0	.70 x 2.75	.40	.284	¾	40%	48″ x 50″ x 100″

δ—This width produced on special order. γ—Length shown is nominal, actual length—97½″.

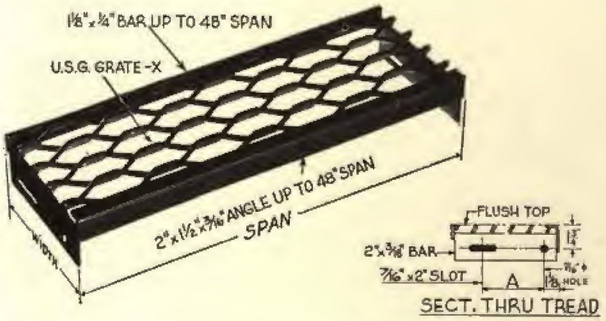
ALUMINUM

2.0 lb.	1.25 x 5.0	.73 x 2.88	.356	.250	⅝	43%	60″ x 60″ or 120″

Note: Special sizes on request. Specify sizes by giving diamonds SWD (Short way of diamond) by LWD (Long way of diamond) respectively.

#2 PROJECTION MESH

1.87 lb.	1.125 x 5.000	.88 x 3.19	.187	.134	11⁄16	67%	6′ x 10′



Widths Available

NO. 4A TREAD (4 LB. GRATE-X)	NO. 5A TREAD (5 LB. GRATE-X)	DIMENSION "A" FOR BOTH 4A & 5A
5¾″	6¼″	2½″
7⅛″	7⅜″	2½″
8½″	8½″	4½″
9⅞″	9¾″	6″
11¼″	10⅞″	7″

Lengths Available. Tread lengths from 16 inches to 48 inches inclusive, in ½ inch increments.

EXPAND-X*
EXPANDED METALS

Description

EXPAND-X and Flattened EXPAND-X are open mesh Expanded Metal units made from sheets of steel or certain other metals which have been slit and expanded in a single cold-drawn operation. See data below for sizes. In addition to our Standard EXPAND-X series, inquiries are invited on our Decorative Expanded Metal series.

Function and Utility

Many uses. Particularly suitable for partitions, ventilator grills, window guards, shelving, radiator enclosures, bins, racks, etc.

Open mesh. The large percentage of open area permits passage of air and light.

Strong and rigid. There are no rivets or welded joints except where units are joined. Strands of expanded metal are set at a sharp angle, improving strength and rigidity. Various weights are available to meet varying conditions.

Smooth surface. The surface of Flattened EXPAND-X expanded metal permits its use for shelving on which objects can more easily stand without tipping and slide without catching.

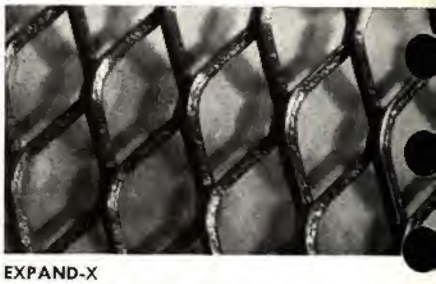
Workable. These products can be readily cut into desired shapes without danger of raveled strands, and may be welded, bent and formed, drawn and flared.

Neat appearance. Pattern is well formed and regularly spaced.

Accessories. Edgings, framings and various other accessories are available.

Metals. Open hearth steel, stainless steel and aluminum are stocked. Copper, brass, etc., can be furnished made to order.

Design service. United States Gypsum Industrial Sales Department is equipped to assist in working out specific problems and to recommend attachment devices and methods.



EXPAND-X

Flattened EXPAND-X

*T. M. Reg. U.S. Pat. Off.

Guide to the Selection of USG Expanded Metals

(All dimensions are approximate)

SUGGESTED APPLICATIONS									Style Number	EXPAND-X Weight per sq. ft. (lbs.)	EXPAND-X SIZE OF DIAMOND INCHES Cen. to Cen. of Bonds		EXPAND-X			Flattened EXPAND-X			Made from U.S. gauge No.
EXPAND-X					Flattened EXPAND-X								Approx. % open area	Sheet sizes		Approx. % open area	Sheet sizes		
Machine guards	Window guards	Partitions	Non-skid surfaces	Baskets	Baskets	Trays racks and shelving	Machine guards	Partitions			Width	Length		Width short way of diamond	Length long way of diamond		Width short way of diamond	Length long way of diamond	
				•	•	•			¼" #20	.94	.26	1.03	40	4′	8′	34	4′	8′	20
				•	•	•	•		¼" #18	1.17	.26	1.03	40	4′	8′	34	4′	8′	18
					•	•			½" #40	.40	.497	1.195	83	4′	8′	75	4′	8′	18
•					•	•			½" #20	.43	.459	1.120	71	4′	8′	64	3′ & 4′	8′	20
•						•	•		½" #18	.70	.507	1.195	65	4′ & 6′	8′ & 10′	58	3′ & 4′	8′ & 10′	18
•				•	•	•			½" #16	.87	.507	1.195	65	4′ & 6′	8′ & 10′	60	3′ & 4′	8′ & 10′	16
	•		•	•	•	•			½" #13	1.46	.503	1.2	61	4′ & 6½′	8′	52	3′ & 4′	8′	13
•				•	•	•			¾" #16	.54	.880	2.00	76	4′	8′ & 10′	74	3′ & 4′	8′ & 10′	16
•	•					•	•		¾" #13	.80	.880	2.00	76	4′ & 6′	8′ & 10′	73	3′ & 4′	8′ & 10′	13
	•	•	•	•	•	•		•	¾" # 9	1.80	.857	2.00	68	4′ & 6′	8′ & 10′	62	3′ & 4′	8′ & 10′	10
		•				•		•	1" #16	.47	1.01	2.375	82	4′	8′	78	3′ & 4′	8′	16
					•	•		•	1½" #16	.40	1.35	3.125	85	4′	8′	85	3′ & 4′	8′	16
		•				•		•	1½" #13	.60	1.35	3.125	85	4′ & 6′	8′ & 10′	80	3′ & 4′	8′ & 10′	13
	•	•		•	•	•		•	1½" # 9	1.19	1.33	3.125	76	4′ & 6′	8′ & 10′	74	3′ & 4′	8′ & 10′	10

Other types and styles also available

UNITED STATES GYPSUM—The Greatest Name in Building

GENERAL OFFICES • 300 WEST ADAMS STREET • CHICAGO 6, ILLINOIS

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BUFFALO, N.Y.
CHARLOTTE, N.C.
CHICAGO, ILL.
CINCINNATI, OHIO
CLEVELAND HEIGHTS, OHIO
(CLEVELAND)
CLIFTON, N.J.
(NEWARK)
DALLAS, TEXAS
DENVER, COLO.
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• STOCKS AVAILABLE FROM WAREHOUSES IN PRINCIPAL CITIES

AIA File 39-B

TECHNICAL INFORMATION

ACOUSTICAL PLASTERS

UNITED STATES GYPSUM

1960

AIA File 39-B

ACOUSTICAL PLASTERS

DESCRIPTION

United States Gypsum Company manufactures three acoustical plasters designed to satisfy specific noise reduction requirements. They are easily applied, provide effective sound conditioning, and being basically mineral, are incombustible.

FUNCTION AND UTILITY

Noise Reduction Coefficients range from .55 to .60. Low in initial cost, they give more sound absorption per dollar than most other commonly used acoustical materials.

For Any Architectural Design their medium to high light reflection properties, combined with a variety of finishes, provide excellent acoustical treatment.

Fire Resistance: In a standard fire test, a floor-ceiling construction consisting of a concrete slab on a cellular steel floor with suspended metal lath ceiling and 5/8″ gypsum-perlite basecoat (100:2; 100:3) with 1/2″ Acoustical Plaster finish, endured in excess of 5 hours, easily providing a 4 hour rating.

TECHNICAL DATA

ACOUSTICAL PLASTER	FINISH	THICKNESS AND BASE	LIGHT REFLECTANCE PERCENT	HEAT INSULATION "K" FACTOR
SABINITE	Trowel	One half inch applied to a Gypsum Plaster Basecoat on Metal Lath.	.53	.59
	Float		.51	
HI-LITE	Stippled		.80	.50
	Stipple-Perforated		.77	
AUDICOTE	Darbied		Satin White .65	.50
	Machine Textured		Special White .70	.50

Light reflectance from tests at a recognized independent laboratory.
Heat insulation data from tests at USG laboratory.

ACOUSTICAL PLASTER	FINISH	SOUND ABSORPTION						
		FREQUENCY						
		125	250	500	1000	2000	4000	NRC
SABINITE	Trowel	.54	.27	.47	.76	.99	.88	.60
	Float	.49	.32	.42	.66	.83	.81	.55
HI-LITE	Stippled	.41	.26	.59	.78	.84	.65	.60
	Stipple-Perforated	.20	.24	.50	.76	.83	.76	.60
AUDICOTE	Darbied	.64	.29	.55	.83	.80	.80	.60
	Machine Textured	.59	.28	.51	.73	.77	.77	.55

Base—One half inch applied to a Gypsum Plaster Basecoat on Metal Lath.
Sound absorption from tests at a recognized independent laboratory.

HI-LITE* ACOUSTICAL PLASTER

DESCRIPTION

HI-LITE Acoustical Plaster may be applied over properly prepared gypsum plaster or portland cement-lime plaster basecoats. Requires the addition of water only. Formulated for hand application, it develops its maximum acoustical efficiency through mechanical opening of the surface, and therefore must be stippled or stipple-perforated. HILITE Acoustical Plaster may be used in areas of relatively high moisture.

Colors—Available in white only.

FUNCTION AND UTILITY

Sound Absorption—Noise reduction coefficient of .60 when stippled or stipple-perforated. (See table for individual frequencies.)

High Light Reflection—Light reflection is in excess of .75 for both stippled and stipple-perforated finish. (See table.)

Maintenance—HI-LITE Acoustical Plaster may be cleaned with a vacuum cleaner using hose and brush attachments.

Paintable—May be redecorated with TEXOLITE* paint (Standard or Imperial). Tests by a nationally recognized laboratory showed HI-LITE Acoustical Plaster with a stipple-perforated finish had no loss in the noise Reduction Coefficient after 4 spray coats of Imperial TEXOLITE paint were applied.

Adaptability—HI-LITE, when applied to a portland cement-lime basecoat, may be used in areas of moderately high humidity such as ceilings over swimming pools.

LIMITATIONS OF USE

1. HI-LITE must be machine mixed to develop proper density.
2. Although more durable than most acoustical materials, it is designed for use on ceilings or wall areas not subject to contact.
3. When perforated, a special perforator with rust resistant prongs should be used.
4. HI-LITE is not recommended for use over radiant heating panels, or for direct application to monolithic concrete.

*T. M. Reg. U. S. Pat. Off.

HI-LITE Stipple-Perforated

AUDICOTE Machine-Textured Finish

SABINITE Trowel Finish

"SABINITE", "HI-LITE", "AUDICOTE", "TEXOLITE", "ROCKLATH", "RED TOP", are registered trademarks owned by the United States Gypsum and used by it to distinguish its products. "SABINITE", "HI-LITE", and "AUDICOTE" identify the particular acoustical plaster; "TEXOLITE" identifies the particular interior paint; "ROCKLATH" identifies the particular plaster base; "RED TOP" identifies the particular plaster; all manufactured by United States Gypsum.

AUDICOTE* ACOUSTICAL PLASTER

DESCRIPTION

AUDICOTE Acoustical Plaster may be applied over properly prepared gypsum plaster or portland cement-lime plaster basecoats, or direct to monolithic concrete. It may be applied using either hand or machine application methods to a machine textured finish, stippled, stipple-perforated, floated or trowelled. AUDICOTE attains its hardness through drying, and develops its acoustical properties by fissuring. Requires the addition of water only. Particularly adaptable to large unbroken ceiling areas where machine application will result in a uniform textured finish.

Colors

Available in Satin White and Special White.

FUNCTION AND UTILITY

Sound Absorption—Noise Reduction Coefficient of .55 for machine textured finish; .60 for hand darbied finish. (See table for individual frequencies.)

Light Reflection

Either machine textured finish or hand applied finish has a light reflection of .65 for Satin White and .70 for Special White.

Maintenance—May be spray painted or refinished with a spray applied coat of AUDICOTE.

Paintable—Tests show no loss in Noise Reduction Coefficient after 2 spray coats of TEXOLITE (Standard or Imperial) applied to U.S.G. specification for painting acoustical plasters, and no appreciable loss when four coats are applied.

LIMITATIONS OF USE

1. AUDICOTE is designed for use on ceiling and wall areas not subject to contact.
2. While a rust inhibitor is used in Audicote, a full brown coat is necessary to help eliminate the possibility of rusting through of tie wires or exposed metal lath.
3. AUDICOTE is not recommended for use over radiant heating panels.

SABINITE* ACOUSTICAL PLASTER

DESCRIPTION

For application over a properly prepared gypsum basecoat. Formulated for hand application, it may be finished with trowel or float, and requires the addition of water only. Any good plaster craftsman can apply.

Colors—Available in Oyster White, Antique Ivory, Spanish Buff, Caenstone, and Colonial Cream.

FUNCTION AND UTILITY

Sound Absorption—Noise reduction coefficient of .60 with Trowel Finish; .55 for float finish. (See table for individual frequencies.)

Light Reflection—Laboratory tests of Oyster White indicate light reflection of .53 for Trowel Finish and .51 for Float Finish.

Maintenance—SABINITE trowel or float finish may be cleaned with a vacuum cleaner, using hose and brush attachment. SABINITE trowel finish may also be cleaned with a putty type wallpaper cleaner.

Painting—SABINITE may be redecorated with TEXOLITE* paint (Standard or Imperial). Apply according to U.S.G. specification for painting SABINITE. Tests show no loss in the noise reduction coefficient after two spray coats.

LIMITATIONS OF USE

1. Designed for use on ceilings and areas not subject to contact.
2. SABINITE Acoustical Plaster should not be used where exposed to excessive moisture, nor on exterior areas where exposed to the elements.
3. SABINITE is not recommended for use over radiant heating panels.

*Trademarks Reg. U.S. Pat. Off.

SPECIFICATIONS

The following short form specification may be used in the general plastering specifications.

GENERAL PROVISIONS

General provisions for plastering apply to acoustical plaster application.

SCOPE

As indicated on drawings, all walls and ceilings shall be finished as herein described.

MATERIALS

Acoustical plaster shall be (choose one)

1. SABINITE Acoustical Plaster (Trowel Finish) (Float Finish).
2. HI-LITE Acoustical Plaster (Stippled Finish) (Stipple-Perforated Finish).
3. AUDICOTE Acoustical Plaster (Machine Textured Finish) (Stipple Finish) (Trowel Finish) (Darbied Finish) as manufactured by the United States Gypsum Company. Color shall be as selected by the architect.

MIXING AND APPLICATION

Mixing and application of acoustical plaster and basecoat plaster shall be in strict accordance with the manufacturer's latest printed directions which are hereby made a part of this specification.

MIXING AND APPLICATION

SABINITE ACOUSTICAL PLASTER—

Trowel or Float Finish

Mixing

Machine mixing recommended. Put 22 quarts clean water in mixer for each bag of SABINITE. Add SABINITE to water and mix until mortar weighs 15 to 18 lbs. net per 12-qt. pail (usually 3 to 5 minutes, depending on speed of mixer). For hand mixing, place SABINITE in one end of mixing box. For each bag of SABINITE add 23 qts. of clean water in other end. Hoe SABINITE into water. The mix will appear dry, but do not add more water. Mix until mortar weighs 15 to 18 lbs. net per 12-qt. pail (approximately 8–10 minutes per 2-bag batch).

Application

SABINITE shall be applied in 2 coats to a uniform total thickness of ½" over a basecoat of RED TOP* gypsum plaster. A full scratch and brown coat of gypsum plaster is required over metal lath, ROCKLATH* plaster base, and masonry bases (excluding monolithic concrete) to provide proper rigidity, strength, and a solid base for acoustical plaster.

Apply the first coat of SABINITE ¼" thick by scratching in and doubling back over a set semi-green gypsum plaster basecoat that is level and cross raked. If basecoat is dry, spray lightly to reduce suction. Allow to set and partially dry (at least overnight) before applying finish coat.

Apply SABINITE finish coat to a thickness of ¼" scratching in and doubling back, over a set, partially dry first coat. Bring total thickness to ½". Leave surface uniformly level and free of trowel marks, working from wet edge. Finish areas in one operation to avoid joinings. Trowel Finish—after gloss leaves surface and surface is firm, trowel lightly to a uniform texture. *Do not use water during troweling.* Float Finish—float second coat 5 to 10 minutes after gloss has left surface and surface is firm. Use a shingle, cork, or carpet float. *Do not use water in floating.*

HI-LITE ACOUSTICAL PLASTER

Stipple or Stipple-Perforated Finish

Mixing

Machine Mixing Required: Use approximately 33 quarts of clean water per bag of plaster. Add HI-LITE Acoustical Plaster to clean water and mix until *mortar weighs 15 to 17 pounds net per 12-quart pail.* (Approximately 10 to 15 minutes mixing time is required depending on speed of mixer.)

Do not retemper or mix one batch with another. Keep all tools and equipment clean. Mix no more than can be used in one hour.

Application

USG HI-LITE Acoustical Plaster shall be applied in two coats to a uniform thickness of ½". A full scratch and brown coat of gypsum plaster or portland cement plaster that has been cross-raked is required over metal lath, gypsum lath and masonry bases (except monolithic concrete) to provide proper rigidity, strength and a solid base for the acoustical plaster.

First Coat: Apply the first coat of HI-LITE Acoustical Plaster ⅜" thick, by scratching in firmly and immediately doubling back over a *set and dry, partially dry or semi-green* basecoat. Darby lightly to a level surface. Allow to set and dry fairly well (at least overnight) before applying finish coat.

Finish Coat: Apply the finish coat ⅛" thick, to a set and fairly dry HI-LITE first coat, scratching in and immediately doubling back, leaving surface free of trowel marks. Work from a wet edge to avoid joinings.

When surface gloss has disappeared or surface is crisp and hard enough to give clean perforations, stipple the surface with a rice root stippling brush to a uniform texture.

To obtain a stipple-perforated finish, perforate the surface not sooner than 30 minutes after stippling but before set (or when surface is hard enough to give clean perforations without tearing). Use perforator as furnished by the U.S. Gypsum Company. Perforations should number approximately 500 per square foot and should be at least 3/16" deep.

RED TOP AUDICOTE ACOUSTICAL PLASTER

Surface Preparation

Surfaces to receive AUDICOTE must be firm, clean, and free from oily film or water soluble materials.

Raw surfaces or edges of steel in contact with Audicote shall be galvanized or primed with rust inhibitive paint. Raw edges shall be similarly primed. In reinforced concrete slabs, ends of bar chairs shall be treated to prevent rusting and other raw steel in the exposed surfaces shall be held to a minimum. (See related inclusion of specifications for concrete.) For best results, base coats of gypsum plaster or portland cement plaster should be semi-green to dry.

Related inclusion (for concrete specifications):

Where AUDICOTE is specified to be applied direct to monolithic concrete, low reinforcing bar chair legs shall be galvanized with ends turned up and high reinforcing bar chair legs shall be dipped in rust inhibitive paint. Other raw steel in the exposed surface of the concrete shall be held to a minimum.

Mixing

Machine Mixing—Machine mixing is recommended. Add AUDICOTE to the water. Use approximately 55 quarts of clean water per bag for the first coat of acoustical plaster. For machine application of the finish coat more water will be required, 70 to 90 quarts, depending upon the type of machine used and the degree of texture desired. An increase in the amount of water used per bag will give a finer texture when machine applied. If hand application of the finish coat is required use approximately 55 quarts of water per bag for the finish coat. Each bag will cover 7 to 8 square yards ½" thick. Mix for a minimum of five minutes in the mixer to develop the proper consistency.

Hand Mixing—If hand mixing is required the material must be hoed sufficiently to develop even consistency free of humps.

Machine Application—The first coat of acoustical plaster should be applied to a thickness of ⅜". Level with a darby and point up with a trowel, if necessary, to provide a smooth and level base for the finish coat. Allow to dry before applying finish coat. Apply finish coat ⅛" thick.

Hand Application—Apply first coat of acoustical plaster by firmly scratching in ⅛" and immediately doubling back to full thickness of ⅜". Level with a darby to provide a smooth and level base for the finish coat. Allow to dry before proceeding with the finish coat. Apply finish coat by scratching in and immediately doubling back to ⅛" thickness. After finish coat has taken up sufficiently, it may be stippled, stipple-perforated, floated, darbied or trowelled to produce the desired finish.

Caution

Allow RED TOP AUDICOTE Acoustical Plaster to dry naturally, furnishing proper heat and ventilation in slow drying weather. Avoid fast or uneven drying which would result in excessive fissuring. Large fissures should be filled and leveled prior to application of the finish coat.

PAINTING ACOUSTICAL PLASTERS

Surface Preparation

Remove all loose dirt or dust by use of a vacuum cleaner with hose and brush attachment.

Paint: Should be water-thinned. TEXOLITE* (Standard or Imperial) is recommended. First coat—mix one part TEXOLITE paste to one part water by volume. Second coat if required—mix one part TEXOLITE paste to two parts water by volume.

Spray on with any gun with a medium fine spray. DeVilbiss spray gun, type MBD, with a No. 30 nozzle or equivalent is recommended. Use 30 to 40 lbs. pressure in the gun and 20 to 30 lbs. on the paint.

Hold nozzle 14 to 18 in. away from work. Use a slow, uniform motion. Cover surface in one pass. Do not pass over same area several times as this builds up paint unnecessarily.

Allow at least overnight drying between coats. If weather is extremely humid, allow additional drying as necessary.

NOTE: Brush painting is not recommended.

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*T. M. Reg. U. S. Pat. Off.

A.I.A. File 39-B

TECHNICAL INFORMATION

SOUND CONTROL PRODUCTS

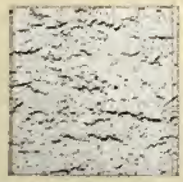
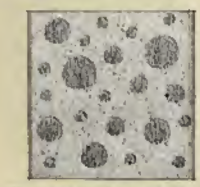
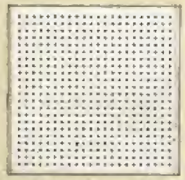
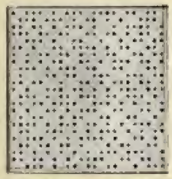
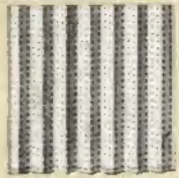
UNITED STATES GYPSUM

1960

A.I.A. File 39-B

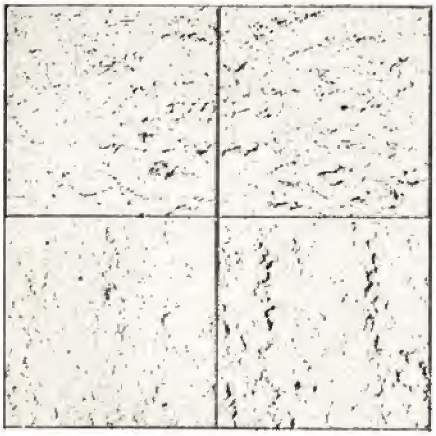
INDEX

SOUND CONTROL PRODUCTS

PRODUCTS See Pages 22, 23, and 24 for all Specifications	Thickness and Size	Edge Treatment	Methods of Installation
 ACOUSTONE* "F" A fissured, light weight, mineral acoustical tile. Finish painted at the factory and available with accurately formed bevel or square edges. Description: Pages 4, 5 Details: Pages 8, 9, 10, 11, 12	¾"x12"x12"	Square or Bevel	Adhesive
	¾"x12"x24"	Square or Bevel	Mechanically suspended on 1. Concealed Z-Spline. 2. E-Z-S Suspension System.
	¾"x12"x36"	Square	Mechanically suspended in E-Z-S Suspension System
 MOTIF'D* ACOUSTONE* The exclusive mineral acoustical tile available in 11 unusual designs. The designs are produced by heavier shadows caused by the "etched" portion of the tile rather than by difference in applied color. Description: Pages 4, 5, 6 Details: Pages 8, 9, 10, 11, 12	¾"x12"x12"	Square or Bevel	Adhesive
	¾"x12"x24"	Square Linea Pattern Only	Mechanically suspended on E-Z-S Suspension System.
	¾"x12"x12"	Square	Mechanically suspended on Concealed Z-Spline.
 SLOTTED AUDITONE* The original slotted wood fiber acoustical tile designed with an exclusive functional appearance. The face and exposed bevels are finish painted WHITE at the factory. Description: Pages 13, 14, 15 Details: Pages 12 and 15	¾" x 12" x 12"	Bevel	Adhesive
	¾" x 12" x 24"	Bevel & Center-Scored with Interlocking Tongue & Groove Edges.	1. Stapled, screwed or nailed to wood framing. 2. Screwed to Gypsum Board. 3. Mechanically Suspended.
 PERFORATED AUDITONE A perforated wood fiber acoustical tile designed to give maximum acoustical efficiency. The face and exposed bevels are finish painted WHITE at the factory. Description: Pages 13, 14, 15 Details: Pages 12 and 15	½" x 12" x 12" ¾" x 12" x 12"	Bevel	Adhesive
	½" x 12" x 24" ¾" x 12" x 24"	Bevel & Center-Scored with Interlocking Tongue & Groove Edges.	1. Adhesive (½" only) 2. Stapled, screwed or nailed to wood framing 3. Screwed to Gypsum Board Base 4. Mechanically Suspended (¾" only)
 RANDOM PERFORATED AUDITONE A random perforated wood fiber acoustical tile designed for acoustical efficiency and beauty. The face and exposed bevels are finish painted WHITE at the factory. Description: Pages 13, 14, 15 Details: Pages 12 and 15	½" x 12" x 12" ¾" x 12" x 12"	Bevel	Adhesive
	½" x 12" x 24" ¾" x 12" x 24"	Bevel & Center-Scored with Interlocking Tongue & Groove Edges.	1. Adhesive (½" only) 2. Stapled, screwed or nailed to Wood framing 3. Screwed to Gypsum Board Base 4. Mechanically Suspended (¾" only)
 CORRUTONE* PANEL Corrugated, Perforated 28 ga., electro-zinc coated, bonderized steel. Face side painted with 2 coats of baked on enamel. Mineral fiber sound absorbing pads placed on top of steel panels. Description: Pages 16, 17 Details: Page 18	1⁵⁄₁₆" to 2⁵⁄₁₆" 24" x 24" or 24" x 48"	Corrugated	Mechanically Suspended on E-Z-S Suspension System.
 PERFATONE* Perforated 26 ga. electro-zinc coated, bonderized steel painted both face and back with baked-on enamel finish. Also available in 35½H .025" thick aluminum units having bare mill finish, aluminized finish or painted both face and back with baked-on enamel. Units backed with choice of mineral fiber sound absorbing pads in flameproof paper. Details: Page 20 Description: Page 19	2½" x 12" x 12" 2½" x 12" x 24" 2½" x 12" x 36"	Bevel & Center-Scored	Mechanically suspended on T-Bars.

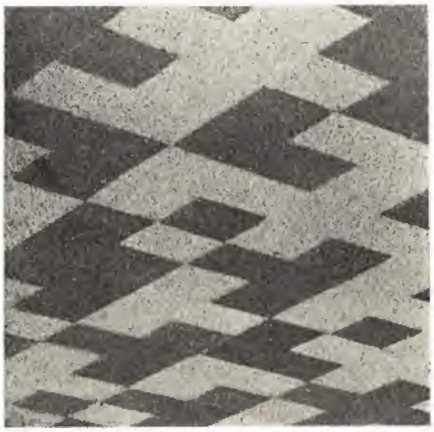
*Trademarks Reg. U.S. Pat. Off.

Efficiency (Noise Reduction Coefficient Spec. Range)	Colors Available	Light Reflection Coefficient	Heat Conductivity	Fire Resistance Rating Fed. Spec. SS-A-118b	Maintenance	Limitations
N.R.C. varies from range .65–.75 to range .70–.80 depending on type of installation. (See Technical Data Page 5)	White or Ivory.	86% White	k=0.35	Class-A "Incombustible"	Cleaned easily with vacuum cleaner or damp sponge. Can be repeatedly spray or brush painted.	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below wainscot height or exposed to impact, abrasion or tampering.
N.R.C. varies from range .65–.75 to range .70–.80 depending on type of installation (See Technical Data Page 5)	White or Ivory.	70% White	k=0.35	Class-A "Incombustible"	Cleaned easily with vacuum cleaner or damp sponge. Can be repeatedly spray or brush painted.	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below wainscot height or exposed to impact, abrasion or tampering.
N.R.C. range .60–.70 (See Technical Data Page 14)	Painted White	75%	k=0.38	Class-D "Combustible" Class-C Rated "Slow Burning" when mill-finished with U.S.G. Flame-Resistant Paint.	Cleaned with putty or paste type wall-paper cleaner. Can be repeatedly spray or brush painted.	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below wainscot height or exposed to impact, abrasion or tampering.
N.R.C. varies from range .50–.60 to range .65–.75 depending on thickness of tile and type of installation. (See Technical Data Page 14)	Painted White	75%	k=0.38	Class-D "Combustible" Class-C Rated "Slow Burning" when mill-finished with U.S.G. Flame-Resistant Paint.	Cleaned with putty or paste type wall-paper cleaner. Can be repeatedly spray or brush painted.	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below wainscot height or exposed to impact, abrasion or tampering.
N.R.C. varies from range .45–.55 to range .60–.70 depending on thickness of tile and type of installation. (See Technical Data Page 15)	Painted White	77%	k=0.38	Class-D "Combustible" Class-C Rated "Slow Burning" when mill-finished with U.S.G. Flame-Resistant Paint.	Cleaned with putty or paste type wall-paper cleaner. Can be repeatedly spray or brush painted.	Should not be used: 1. Where exposed to steam or very high humidity. 2. Below wainscot height or exposed to impact, abrasion or tampering.
N.R.C. varies from range .75–.85 (See Technical Data Page 17)	Painted White			Class-A "Incombustible"	Washable Repaintable	Should not be used in areas of very high humidity or where water might repeatedly impinge against the surface.
N.R.C. range .85–.95 (See Technical Data Page 19)	Normally painted White	78%		Class-A "Incombustible"	Washable Repaintable	Use Aluminum PERFATONE Pans with galvanized fittings in areas of very high humidity or where water might repeatedly impinge against the surface.

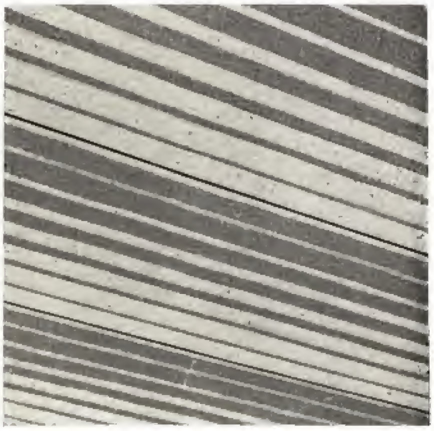


Bevel ACOUSTONE "F"
Conventional joints

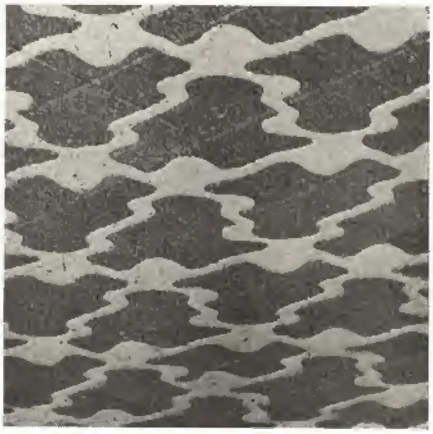
Square Edge ACOUSTONE "F"
Inconspicuous joints



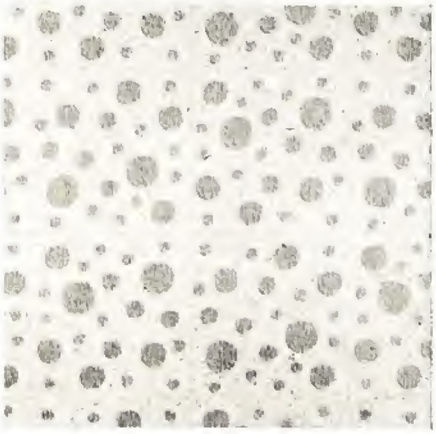
MOSAIC design No. 39
"MOTIF'D ACOUSTONE"



LINEA design No. 38
"MOTIF'D ACOUSTONE"



FANTASIA design No. 40
"MOTIF'D ACOUSTONE"



GALAXY design No. 33
"MOTIF'D ACOUSTONE"

DESCRIPTION

ACOUSTONE "F"

ACOUSTONE "F", mineral acoustical tile, is manufactured by binding mineral fibers into a lightweight, highly sound absorbent tile form. The fissured surface closely resembles that of Travertine marble. No two tiles are identical in texture; the pattern is as natural as the veining of fine marble or the grain of wood. Each tile is finish-painted at the factory. Available with accurately formed bevel or square edges.

Sizes ACOUSTONE "F" is available in ¾″ thickness in 12″x12″, 12″x 24″ and 12″x36″ sizes with square or bevel edges.

MOTIF'D* ACOUSTONE

MOTIF'D ACOUSTONE mineral acoustical tile, is produced by altering the surface of standard ACOUSTONE "F" tile by an exclusive USG process resulting in an integrally permanent decoration as selected by the designer. The finished product is mill painted. The pattern selected is accented by the varying shadows caused by directional changes in the source of light rather than by differences in applied color.

Sizes MOTIF'D ACOUSTONE (except LINEA design No. 38) is available in 12″x12″ units; ¾″ thick with square edges only, kerfed for splines used in adhesive or mechanical suspensions. Linea MOTIF'D ACOUSTONE is available in 12″x24″ size, ¾″ thick, with square edges only, kerfed only for the EZS System.

Patterns The standard patterns illustrated on this page and page 6 are available. These patterns provide the designer a wide range of beautiful and unusual decorative effects. Custom patterns can be produced to meet individual requirements.

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FUNCTION AND UTILITY

Sound Absorption Sound absorption depends upon the mounting. Adhesive application is designated as the No. 1 mounting and the suspended acoustical units on the Z-Spline Systems are designated as the No. 7 mounting.

Colors The face side and exposed bevels of ACOUSTONE "F" and MOTIF'D ACOUSTONE are painted at the factory with full finish coat of either white or ivory paint.

Light Reflection ACOUSTONE "F" painted with standard White finish has a light reflection of 86%.

Motif'd Acoustone acoustical tile painted white has a light reflection coefficient of 70% as tested by A.M.A. Laboratories.

Washability Factory-painted MOTIF'D ACOUSTONE and ACOUSTONE "F" may be washed with a damp sponge or cleaned with a vacuum cleaner, chemical rubber sponge, used dry, or putty or paste type wallpaper cleaner. Accidental spotting or soiling can usually be removed by this method before over-all redecoration is necessary.

Thermal Conductivity MOTIF'D ACOUSTONE and ACOUSTONE "F" have a thermal conductivity factor of k-0.35.

Paintability MOTIF'D ACOUSTONE and ACOUSTONE "F", mineral acoustical tile, may be brush or spray painted many times without loss of sound absorption at 500 cycles per second or in the Noise Reduction Coefficient. The effect of repeated coats of paint on ACOUSTONE "F" and other materials may be found in Research Paper RP-1298 "Effect of Paint on Sound Absorption of Acoustical Materials," which is obtainable from the National Bureau of Standards, U. S. Department of Commerce, Washington, D. C. Oil, casein, resin emulsion or spirit thinned paints may be used with recommended painting procedures.

Resistance to Soiling and "Breathing" The smooth, painted finish of MOTIF'D ACOUSTONE and ACOUSTONE "F" resists soiling and limits objectionable air travel ("breathing") through the face of the tile.

LIMITATIONS OF USE

MOTIF'D ACOUSTONE and ACOUSTONE "F", mineral acoustical tiles, are designed for normal moisture conditions. They should not be used where they will be exposed to excessively high humidity. They should not be used below wainscot height or where they may be damaged by impact, abrasion or tampering. ACOUSTONE should not be installed until moisture resulting from plastering, concrete or terrazzo work, etc., is no longer a hazard.

TECHNICAL DATA

SOURCE: Acoustical Materials Association

UNITS	MOUNTING	THICKNESS	Coefficients at Cycles Shown						NRC Spec. Range	Wt. psf	Lt. Ref.	Fire Resistance
			125	250	500	1000	2000	4000				
MOTIF'D ACOUSTONE "Striated" Pattern #19	1	¾"	.09	.26	.69	.90	.86	.82	.65–.75	1.28	.70	Incombustible Fed. Spec. SS-A-118b
	7	¾"	.71	.64	.70	.78	.87	.93	.70–.80	1.27		
ACOUSTONE "F"	1	¾"	.15	.29	.84	.93	.78	.71	.65–.75	1.31	.86	Incombustible Fed. Spec. SS-A-118b
	7	¾"	.54	.70	.66	.76	.80	.66	.75–.85	1.29		

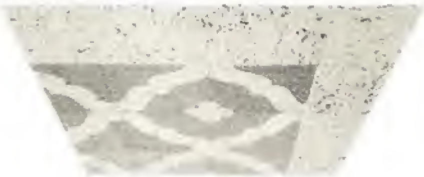
Tile tested were painted with a full finish coat of paint.

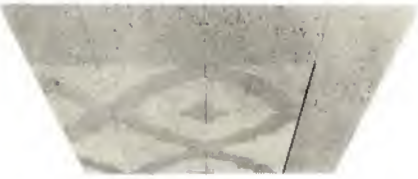
MOUNTING NO. 1—Cemented to Plasterboard—Considered Equivalent to Cementing to Plaster or Concrete Ceilings.

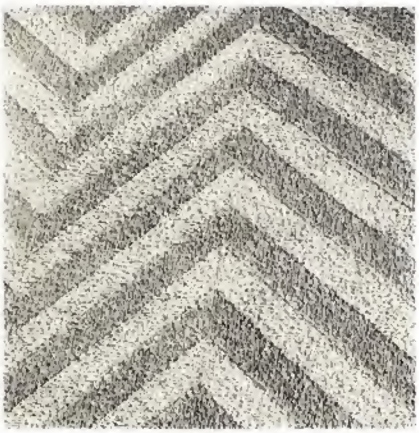
MOUNTING NO. 7—Attached to Metal Supports on Metal Suspended System.

HOW MOTIF'D* ACOUSTONE PATTERNS WORK

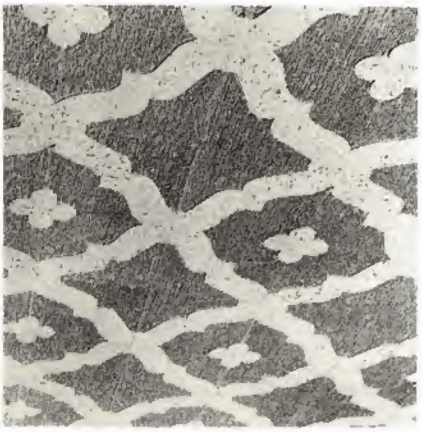
The unretouched photographs below were made of the same section of an installation of Motif'd Acoustone tile, but under two different lighting conditions. The upper picture shows contrast or color difference obtained under normal lighting; the lower picture shows how the contrast is reversed when light was shifted 180 degrees from that used in the upper view. Such changes in degrees of contrast are usually apparent in every Motif'd Acoustone installation. This "mobile" effect shifts, not only with light changes, but with changes in position of the observer. The pattern never becomes monotonous.



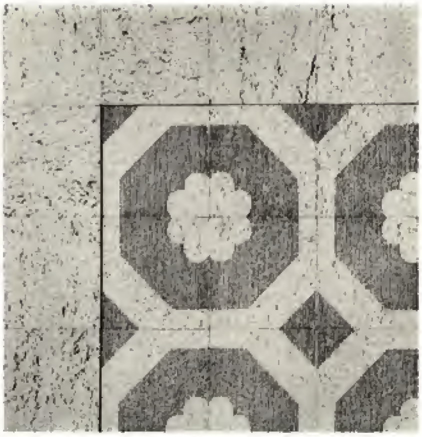




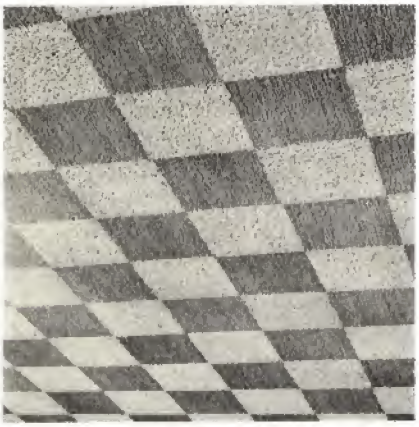
GROSGRAIN
design No. 37



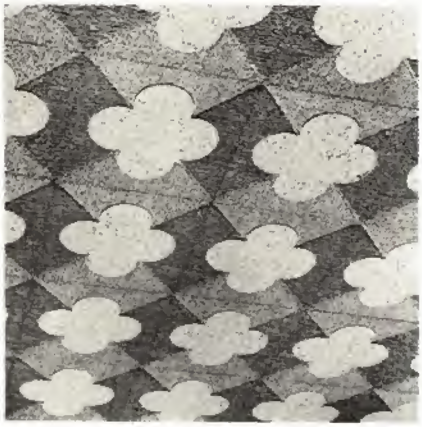
GEORGIAN
design No. 2



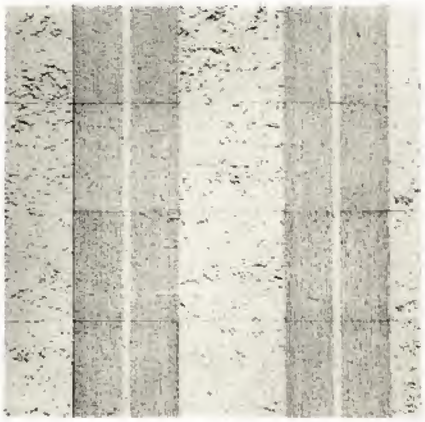
MEDALLION
design No. 10



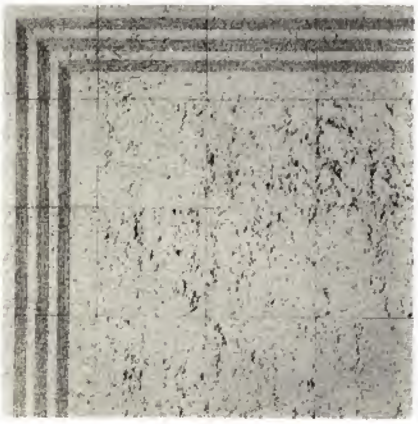
STRIATED
design No. 19



CLOVER LEAF
design No. 5



BORDER
design No. 32 B



OUTLINE
design No. 32 A

TEXTURA
design No. 36

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INSTALLATION METHODS

1. ADHESIVE APPLICATION:
(Mounting No. 1.)

- A. To Plastered Ceilings.
- B. To USG Gypsum Boards.

2. MECHANICAL SUSPENSION:
(Mounting No. 7.)

- A. Concealed Z-Splines
  1. Attached to carrying channels.
  2. Directly Attached to Bar Joists.
  3. Directly Attached to Wood Furring.
- B. E-Z-S Suspension System
  1. Attached to carrying channels.
  2. Directly Attached to Bar Joists.
  3. Directly Attached to Wood Furring.

1. ADHESIVE APPLICATION

Application with adhesive is the most widely used method and is recommended where a suitable base exists.

BASES FOR ADHESIVE APPLICATION

A. PLASTER

1. On *new work:* a full thickness of rodded brown coat of gypsum plaster in a clean, dry, level state provides an excellent base.

On *existing work:*

a. *Old lime putty finish* that has been in place for a year or more offers a good base if the finish is well bonded to the base coat of plaster. If it is not well bonded, consider the application of Z-Splines attached to wood furring strips with No. 90 Clips. (Note mechanical suspension systems and details on page 11.)

b. A good quality paint well bonded to sound plaster and in place not less than 6 months will usually give excellent results.

B. ACOUSTONE CEMENTED TO GYPSUM BOARDS

Where an incombustible base is required, MOTIF'D ACOUSTONE and ACOUSTONE "F" can be adhesively applied to several gypsum board bases. They may be installed by the following methods:

1. BAXBORD Z-Board SHEETROCK SHEETROCK FIRECODE BAXBORD FIRECODE ROCKLATH	Nailed to Wood Members
2. BAXBORD Z-Board SHEETROCK FIRECODE BAXBORD FIRECODE	Nailed to Nailing Channels

Adhesive Application
(Mounting No. 1)

E-Z-S Suspension System
(Mounting No. 7)

Concealed Z Spline System
(Mounting No. 7)

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*T.M. Reg. U.S. Pat. Off.

1. ADHESIVE APPLICATION—Cont'd.

LIMITATIONS OF USE

1. *Size of Units.*
Tile should not exceed 12"x12" for ceilings or 12"x24" for walls.

2. *New lime putty* finish may have free lime on the surface which can cause saponification of oils and resins in the adhesive. For this finish a combination of adhesive and nailing is recommended.

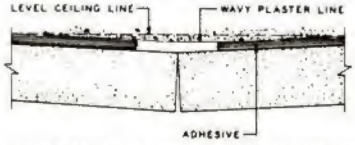
3. Hard oil (sometimes called gloss oil) when used as a size for calcimine may react with the solvents of the adhesive and therefore is an unsatisfactory base. In this case, a combination of nailing and adhesives must be used. The acoustical contractor can determine by job testing when to augment the adhesive with nailing.

4. The use of ROCKLATH without plaster is not recommended where job conditions, particularly moisture conditions, are unsuitable. Accordingly, ACOUSTONE, mineral acoustical tile, shall be applied to such a base only when the installation of the base is made under the supervision of and to the satisfaction of the USG acoustical contractor.

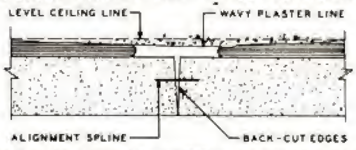
5. Since it is not always possible to determine the condition of the concrete surface, the adhesive application of any acoustical tile to a concrete slab is not recommended. (For a more economical and secure method of attaching MOTIF'D ACOUSTONE or ACOUSTONE "F" to concrete slabs, see architectural specifications, pages 22 and 23 and details page 11, "ACOUSTONE suspended on Z-Splines directly attached to wood furring strips.")

6. The adhesive application of MOTIF'D ACOUSTONE and ACOUSTONE "F" directly to wood strips or plywood is not recommended. (For a more economical and secure method of attaching ACOUSTONE to wood furring strips, see architectural specifications, pages 22, 23, and 24 and details page 11, "ACOUSTONE suspended on Z-Splines directly attached to wood furring strips.")

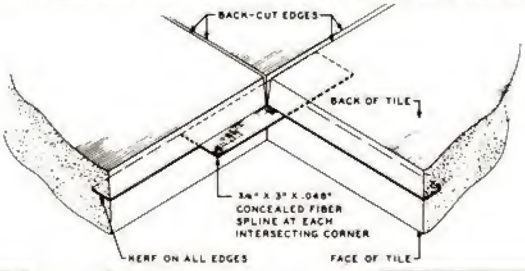
ADHESIVE APPLICATION



OLD TYPE SQUARE EDGES PRODUCE OPEN-OFFSET JOINTS OVER WAVY CEILINGS



NEW TYPE SQUARE EDGES PRODUCE TIGHTER JOINTS IN CLOSER ALIGNMENT


BACK-CUT EDGES
BACK OF TILE
¾" X 3" X .048" CONCEALED FIBER SPLINE AT EACH INTERSECTING CORNER
KERF ON ALL EDGES
FACE OF TILE

2. MECHANICAL SUSPENSION

TILE MAY BE ATTACHED

1. To carrying channels using the Concealed Z-Spline System. (Details on page 9 and architectural specifications on pages 22 and 23.)

To carrying channels using the E-Z-S System. (Details on page 10 and architectural specifications on page 23.)

2. Direct to bar joists using the Concealed Z-Spline System or the E-Z-S System. (Specifications on pages 22 and 23.)

3. Direct to wood furring using the Concealed Z-Spline System or the E-Z-S System. (Specifications on page 22 and details on page 11.)

SYSTEMS

1. Concealed Z-Splines. (See details page 9 and specifications on pages 22 and 23.)
Use ¾"x12"x12" or ¾"x12"x24" MOTIF'D ACOUSTONE, ACOUSTONE "F", mineral acoustical tile. This method offers an economical, simple, rigid construction and permits the use of flush joints where lighting conditions are not too severe.

This suspension method provides metal spline supports in kerfs along the four edges of each unit. Splines also act as a continuous seal to minimize air travel through the joints. Self leveling of the tile joints is assured since intersecting corners of four adjacent units are supported on the same member.

2. E-Z-S Suspension System. (See details page 10 and specifications on page 23.)

Use ¾" thick 12"x24" or 12"x36" ACOUSTONE "F" with square edges, or ¾" x 12" x 24" "LINEA" MOTIF'D ACOUSTONE. This method is used where access is required to the area above the ceiling for adjusting valves, electrical equipment, controls of air conditioning equipment, or for other reasons.

Because of its ease of installation, this method is economical and provides a low cost acoustical ceiling with complete accessibility to the area above the ceiling. Any type lighting arrangement is easily adaptable to the E-Z-S Suspension System. Lighting troffers can be installed easily and economically. Full advantage can be taken of the economy of gravity-held diffusers laid directly in the Z-Spline to replace equivalent area of ACOUSTONE. This permits maximum flexibility of lighting arrangement.

3. Z-Splines Attached To Wood Furring Strips. (See details page 11 and specifications on pages 22, 23, and 24.)

This method is particularly adaptable to those existing ceilings where the surface is in such condition that it is impossible to attach MOTIF'D ACOUSTONE or ACOUSTONE "F" tile by cementing.

This system is installed by nailing wood furring strips, maximum spacing of 4'-0" on centers for the concealed method or 5'-0" on centers for the E-Z-S system, and attaching Z-Splines to the furring strips with the No. 90 Clip. The No. 90 Clip may also be used to attach Z-Splines directly to existing wood joists or to wood furring strips nailed to exposed concrete surfaces.

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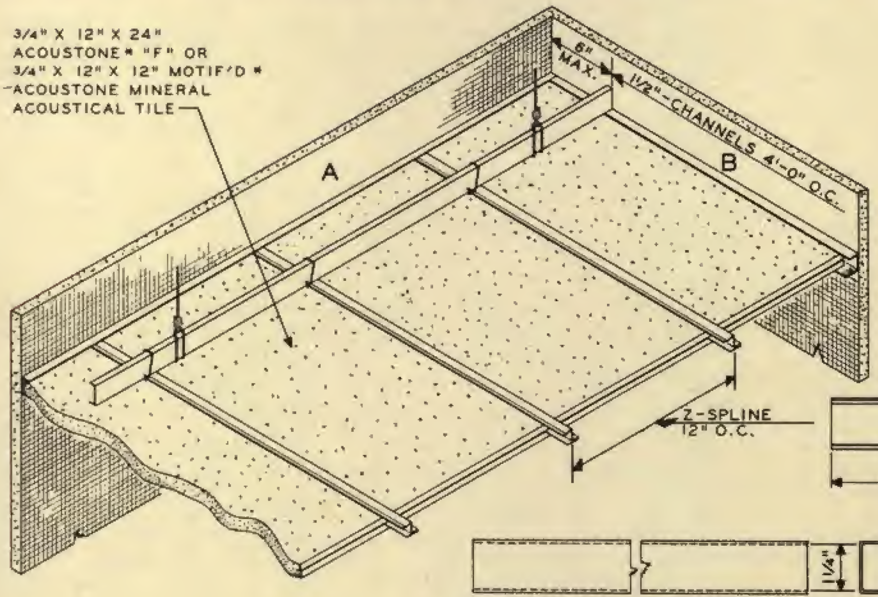
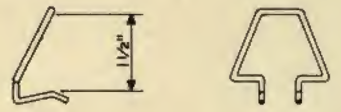
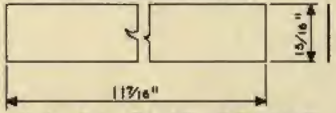
*T.M. Reg. U.S. Pat. Off.

ACOUSTONE* "F" OR MOTIF'D* ACOUSTONE, MINERAL ACOUSTICAL TILE, MECHANICAL SUSPENSION ON CONCEALED Z-SPLINE SYSTEM

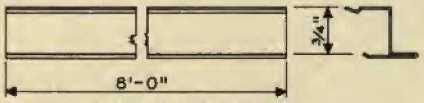

3/4" X 12" X 24" ACOUSTONE* "F" OR 3/4" X 12" X 12" MOTIF'D* ACOUSTONE MINERAL ACOUSTICAL TILE
A
B
6" MAX.
1½" CHANNELS 4'-0" O.C.
Z-SPLINE 12" O.C.



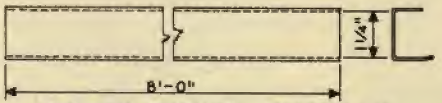
NO. 82A CLIP



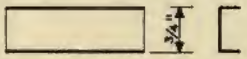
24-GA. FLAT SPLINE



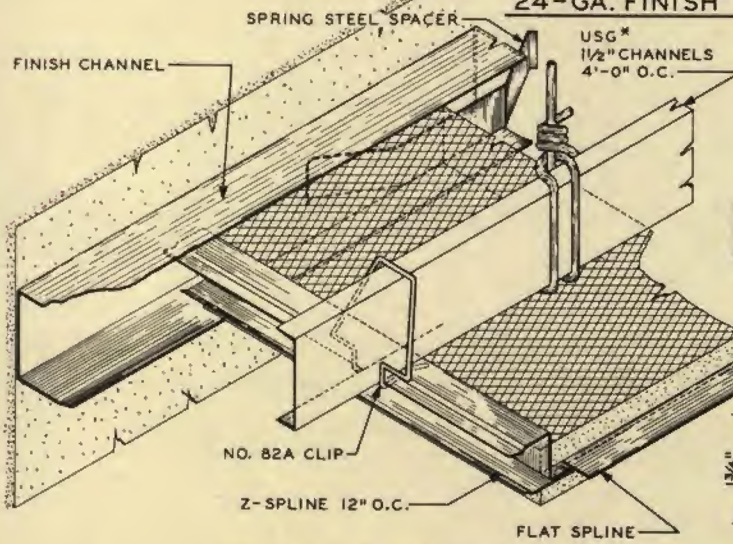
3/4" Z- SPLINE



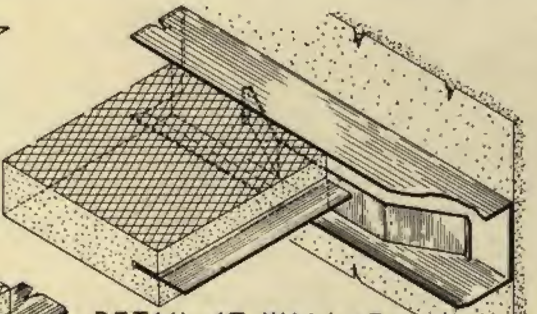
24-GA. FINISH CHANNEL



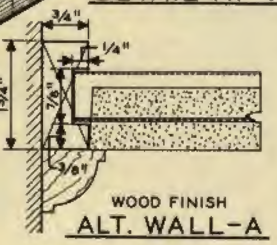
3/4" Z-SPLINE SPLICE



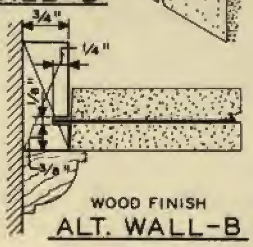
DETAIL AT WALL-A



DETAIL AT WALL-B



ALT. WALL-A



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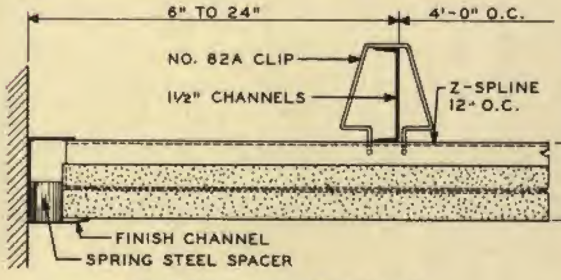
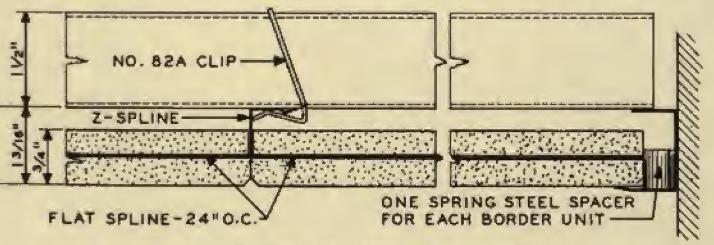


DETAIL AT WALL-A



DETAIL AT WALL-B

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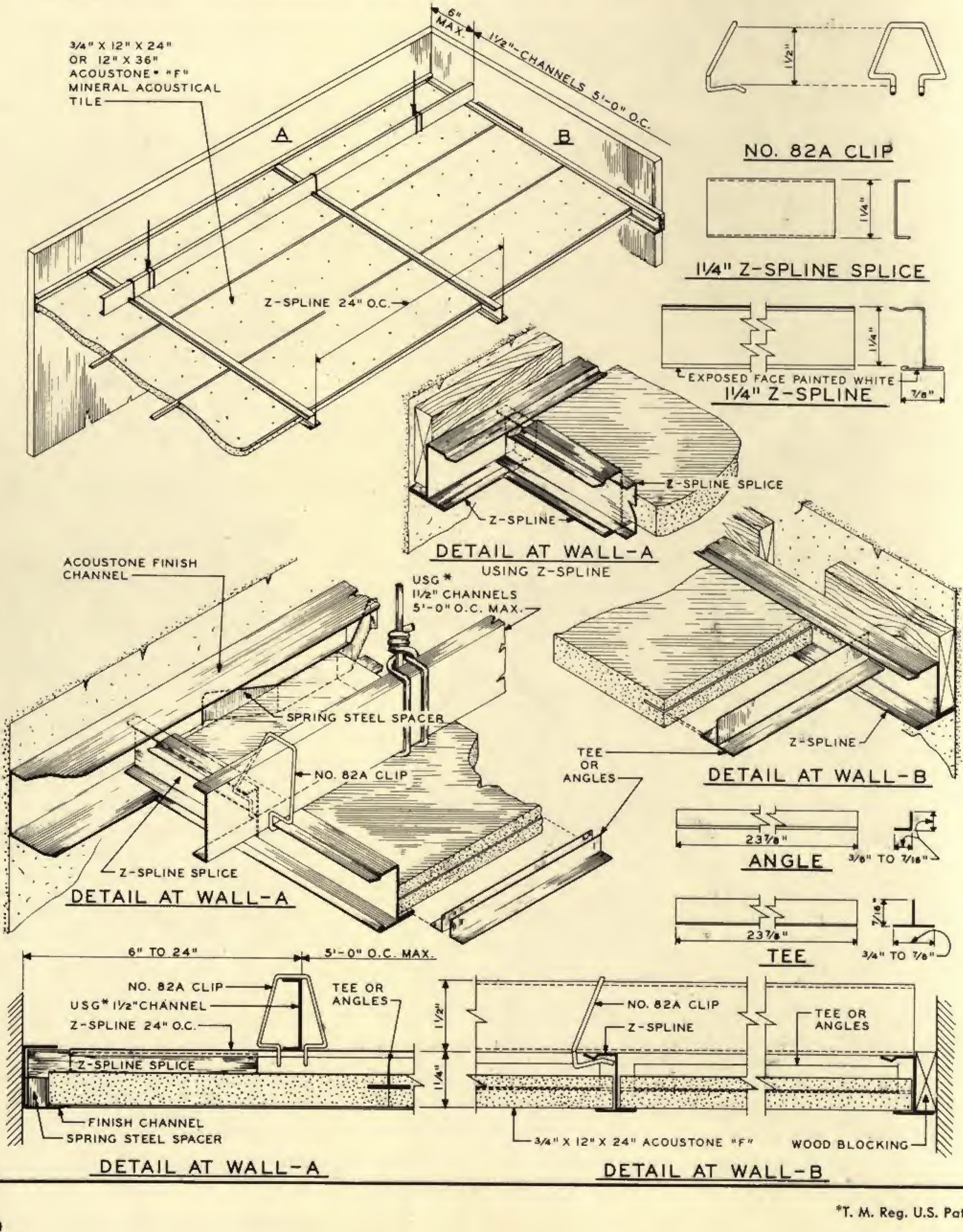
*T.M. Reg. U.S. Pat. Off.

ACOUSTONE* "F" OR MOTIF'D* ACOUSTONE, MINERAL ACOUSTICAL TILE, MECHANICAL SUSPENSION ON E-Z-S SYSTEM



NO. 82A CLIP

1¼" Z-SPLINE SPLICE

1¼" Z-SPLINE

DETAIL AT WALL-A
USING Z-SPLINE

DETAIL AT WALL-A

DETAIL AT WALL-B

ANGLE

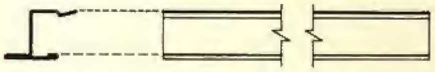
TEE

DETAIL AT WALL-A

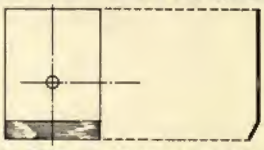
DETAIL AT WALL-B

*T. M. Reg. U.S. Pat. Off.

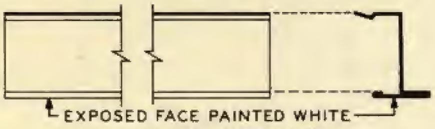
ACOUSTONE* "F" OR MOTIF'D* ACOUSTONE, MINERAL ACOUSTICAL TILE, SUSPENDED ON Z-SPLINE DIRECTLY ATTACHED TO WOOD FURRING STRIPS



3/4" Z-SPLINE

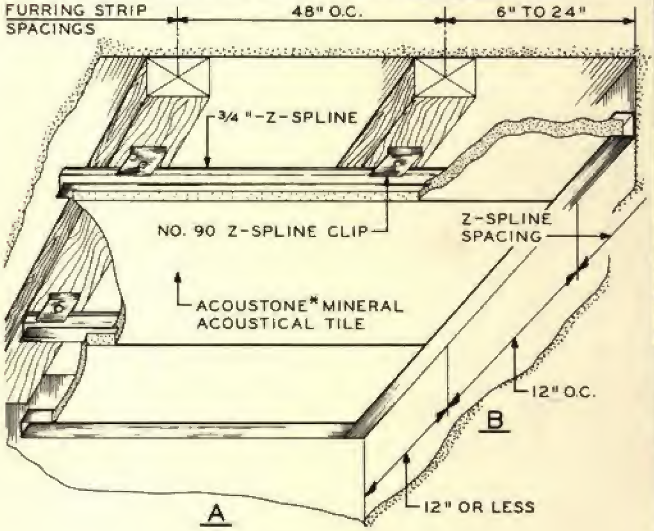


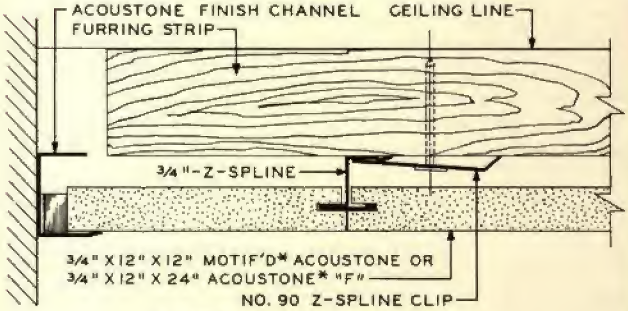
NO. 90 Z-SPLINE CLIP



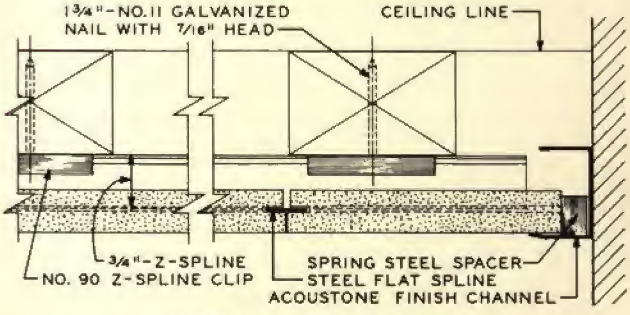
1 1/4" Z-SPLINE

CONCEALED Z-SPLINE METHOD



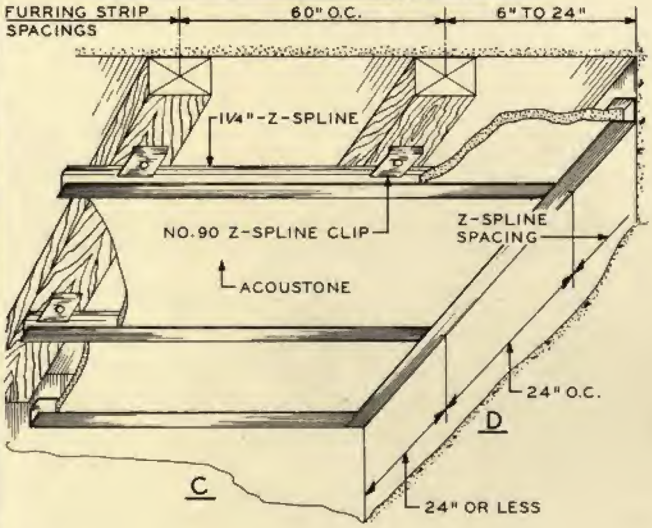


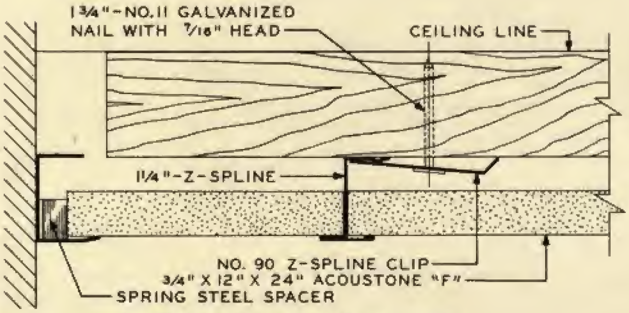
DETAIL AT WALL-A



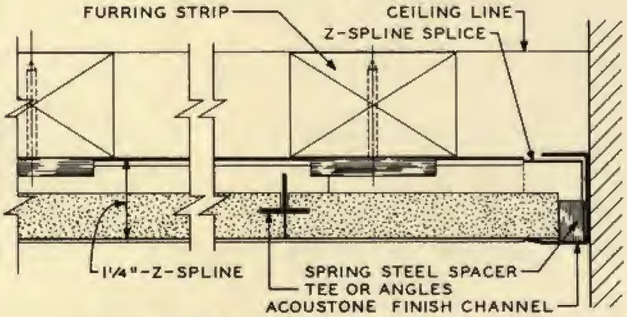
DETAIL AT WALL-B

E-Z-S SUSPENSION SYSTEM




1 3/4"-NO. 11 GALVANIZED NAIL WITH 7/16" HEAD
CEILING LINE
1 1/4"-Z-SPLINE
NO. 90 Z-SPLINE CLIP
3/4" X 12" X 24" ACOUSTONE "F"
SPRING STEEL SPACER

DETAIL AT WALL-C



DETAIL AT WALL-D

* T.M. REG. U.S. PAT. OFF.

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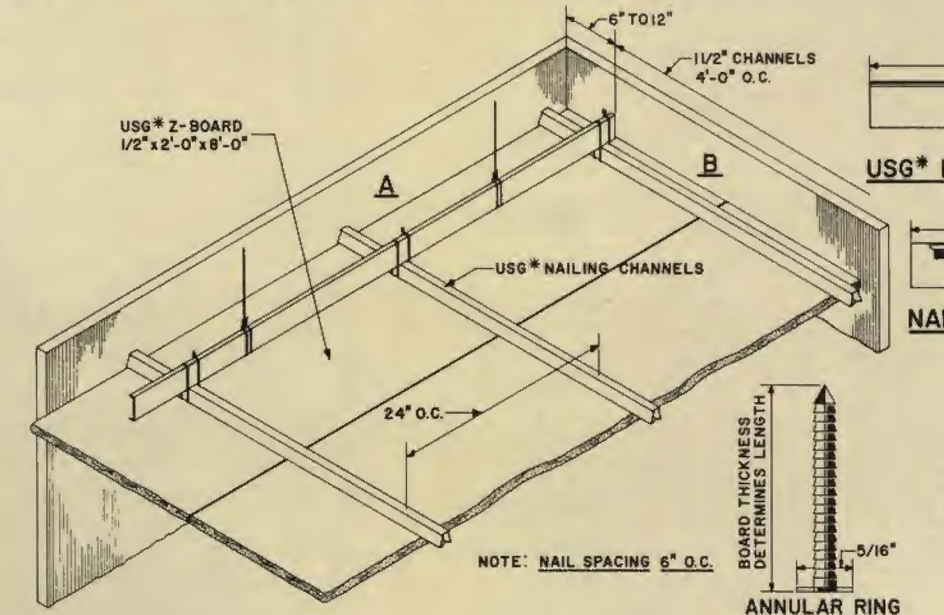
*T. M. Reg. U.S. Pat. Off.

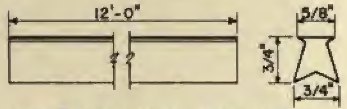
MINERAL OR WOOD FIBER ACOUSTICAL TILE APPLICATION ON GYPSUM BOARD-NAILING CHANNEL SYSTEM


6" TO 12"
1 1/2" CHANNELS 4'-0" O.C.
USG* Z-BOARD 1/2"x2'-0"x8'-0"
A
B
USG* NAILING CHANNELS
24" O.C.
BOARD THICKNESS DETERMINES LENGTH
5/16"

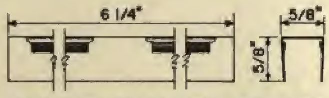
NOTE: NAIL SPACING 6" O.C.

ANNULAR RING SHANK NAIL

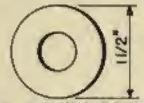
12 1/2 TO 11 GAUGE WITH 16 TO 20 RINGS PER INCH



USG* NAILING CHANNEL

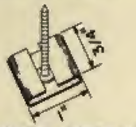


NAILING CHANNEL SPLICE



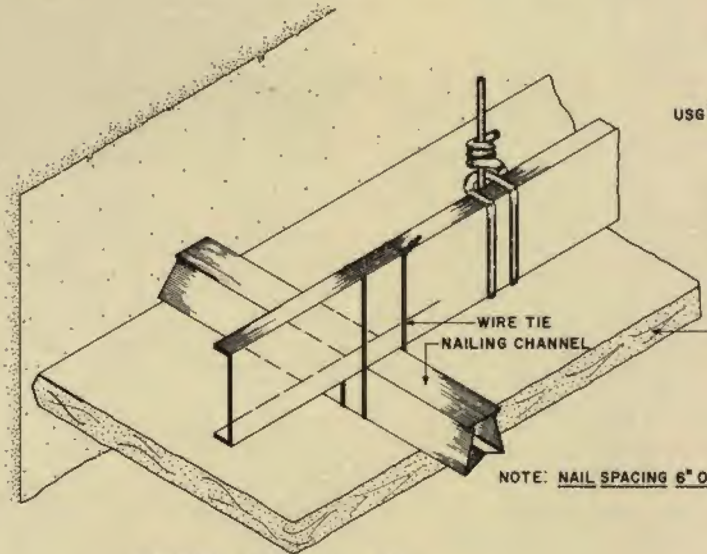
BUTT JOINT WASHER

NOTE: 6" O.C. EACH JOINT. ENGAGE ADJACENT BOARD

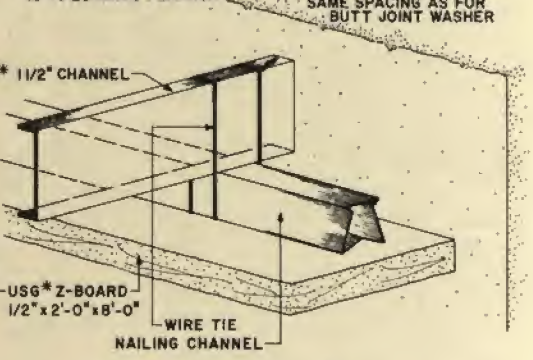


BUTT JOINT CLIP

SAME SPACING AS FOR BUTT JOINT WASHER

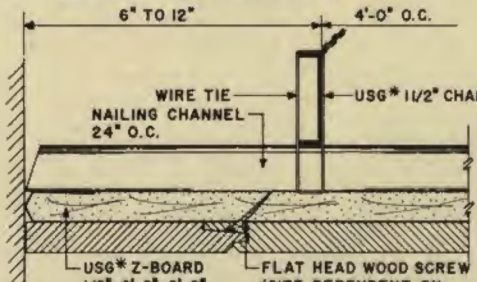


NOTE: NAIL SPACING 6" O.C.



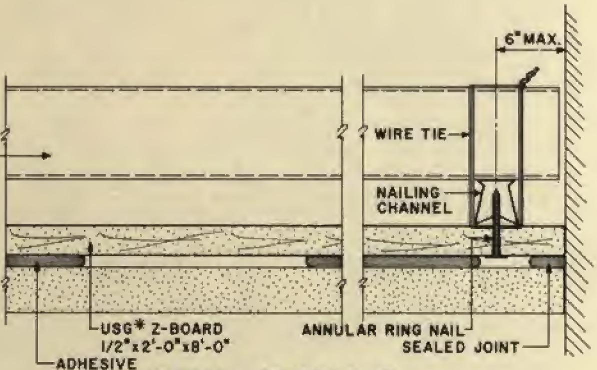
DETAIL AT WALL-B

DETAIL AT WALL-A


6" TO 12"
4'-0" O.C.
WIRE TIE
USG* 1 1/2" CHANNELS
NAILING CHANNEL 24" O.C.
USG* Z-BOARD 1/2"x2'-0"x8'-0"
FLAT HEAD WOOD SCREW (SIZE DEPENDENT ON THICKNESS OF AUDITONE*)

DETAIL AT WALL-A

SCREW APPLICATION OF FIBER TILES



DETAIL AT WALL-B

ADHESIVE APPLICATION OF MINERAL OR FIBER TILE

*T.M. Reg. U.S. Pat. Off.

AUDITONE*

WOOD FIBER ACOUSTICAL TILE

DESCRIPTION

SLOTTED AUDITONE ACOUSTICAL TILE

Slotted Auditone, wood fiber acoustical tile, is a slotted wood fiber tile designed to give maximum acoustical efficiency with an exclusive, functional appearance. Each unit is finish-painted white at the factory and is available accurately formed, with butt bevel or tongue and groove edges.

Sizes: Slotted Auditone is available in $\frac{3}{4}$" thickness and in 12" x 12" or 12" x 24" sizes. The 12" x 24" tongue and groove units are center-scored to represent two 12" x 12" units with the slots parallel to the long edges.

PERFORATED AND RANDOM PERFORATED AUDITONE ACOUSTICAL TILE

Perforated Auditone wood fiber acoustical tile is a lightweight, low-cost, wood fiber tile designed and produced to give maximum acoustical efficiency. 529 holes $\frac{3}{16}$" in diameter are cleanly drilled into each square foot of tile. Perforated Auditone is accurately formed, with beveled or tongued and grooved edges.

Random Perforated Auditone wood fiber acoustical tile is a lightweight, low-cost wood fiber tile, designed to minimize the appearance of individual tile units. 135 holes $\frac{1}{4}$" in diameter and 188 holes $\frac{3}{16}$" in diameter are cleanly drilled into each square foot of Random Perforated Auditone.

Perforated and Random Perforated Auditone are finish-painted white at the factory.

Sizes: Perforated Auditone is available in $\frac{1}{2}$" or $\frac{3}{4}$" thicknesses and in 12" x 12" or 12" x 24" sizes. The 12" x 24" tongue and groove units are center-scored and perforated to represent two 12" x 12" units.

Random Perforated Auditone is available in $\frac{1}{2}$" or $\frac{3}{4}$" thicknesses and in 12" x 12" or 12" x 24" sizes. The 12" x 24" tongue and groove units are center-scored to represent two 12" x 12" units.

Edge Treatment: Slotted, Perforated, and Random Perforated Auditone are made with butt bevel edges for cementing to proper bases without supplementary nailing. Slotted, Perforated, and Random Perforated Auditone are also made with tongue and groove edges designed to better utilize the economical methods available for stapling, screwing, or nailing wood fiber tile directly to wood joists, studs, or nailing strips. The tongue and groove edges assure level joints and smooth ceiling appearance.

FUNCTION AND UTILITY

Sound Absorption depends upon the thickness of the tile and the type of mounting. See technical data on pages 14 and 15 for sound absorption values.

Paint and Color: The face and bevels of Slotted, Perforated, and Random Perforated Auditone are finish-painted white at the factory.

Maintenance: Slotted, Perforated, and Random Perforated Auditone can be repeatedly brush or spray painted following recommended paint procedures with oil, resin emulsion, casein, or any of the commercial types of paint without loss of sound absorption at 500 cycles per second or in the Noise Reduction Coefficient. Slotted, Perforated, and Random Perforated Auditone wood fiber acoustical tile can be cleaned with putty or paste type wallpaper cleaners.

Resistance to Soiling and Breathing: The smooth, painted finish of Slotted, Perforated, and Random Perforated Auditone wood fiber acoustical tile resists soiling. Slotted and Perforated Auditone with tongue and groove edges minimize objectionable air travel through the joints when used on suspended nailing strips.

Thermal Conductivity: Slotted, Perforated, and Random Perforated Auditone have a k factor of 0.38.

Fire Resistance: 1. Slotted, Perforated, and Random Perforated Auditone, when painted with a standard USG mill finish, are rated "combustible" by Federal Specification SS-A-118b.
2. Slotted, Perforated, and Random Perforated Auditone, when mill-finished with USG flame-resistant paint, are rated Class C "slow-burning" under Federal Specification SS-A-118b.

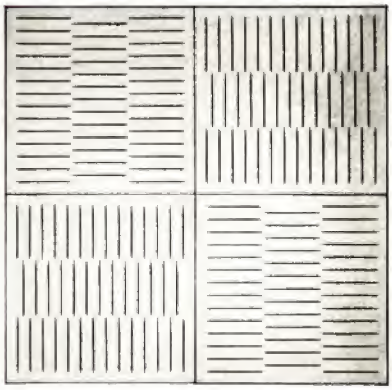
Light Reflection: Perforated and Slotted Auditone wood fibre tile have a light reflection of 75% as tested by A.M.A. Laboratories.

Random Perforated Auditone has a light reflection of 77% as tested by A.M.A. Laboratories.

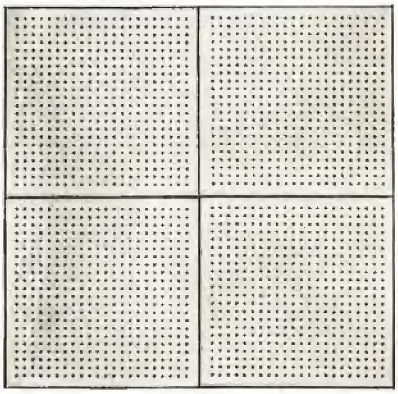
LIMITATION OF USE

Slotted, Perforated, and Random Perforated Auditone should not be used below wainscot height or where tile will be subjected to severe impact, abrasion, or tampering.

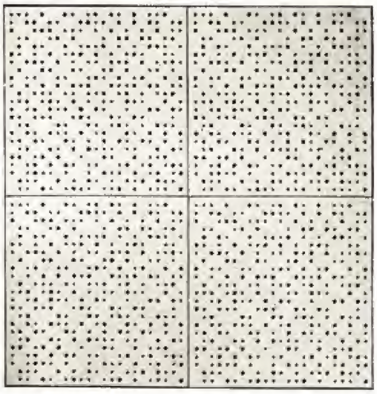
Auditone tile is not recommended for use where it will be exposed to steam or constant high humidity.



Slotted Auditone



Perforated Auditone



Random Perforated Auditone

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*T.M. Reg. U.S. Pat. Off.

AUDITONE*

WOOD FIBER ACOUSTICAL TILE

TECHNICAL DATA

SLOTTED AUDITONE TILE

SOUND ABSORPTION COEFFICIENTS

SOURCE: Acoustical Materials Association

Thickness	Mounting	Coefficients at Cycles Shown 125	250	500	1000	2000	4000	NRC Spec. Range	Weight psf
¾"	1	.18	.29	.72	.82	.84	.71	.60-.70	.87
¾"	2	.20	.62	.50	.67	.82	.73	.65-.75	.93

Tile tested were painted with a full finish coat of paint. **MOUNTING NO. 1**—Cemented to plasterboard—Considered Equivalent to Cementing to Plaster or Concrete Ceilings. **MOUNTING NO. 2**—Nailed to wood strips.

DESIGN DATA

UNITS	EDGE	SLOTTED	THICKNESS	CENTER-SCORED
12" x 12"				
Field Tile	Butt	Yes	¾"	No
Border Tile	Butt	No	¾"	No
12" x 24"				
Field Tile	T & G	Yes	¾"	Yes
Border Tile	T & G	No	¾"	Yes

LIGHT REFLECTION:

SLOTTED AUDITONE—WHITE 75%
Tests by Official A.M.A. Laboratories.

HEAT CONDUCTIVITY: k=0.38

FIRE RESISTANCE:

1. "Combustible" when painted with standard USG Mill-Finish.
2. Meets Federal Specifications SS-A-118b Class C "Slow Burning" classification when mill painted with USG Flame-Resistant Paint

PERFORATED AUDITONE TILE

SOUND ABSORPTION COEFFICIENTS

SOURCE: Acoustical Materials Association

THICKNESS	MOUNTING	Coefficients at Cycles Shown 125	250	500	1000	2000	4000	NRC Spec. Range	WEIGHT psf
½"	1	.14	.27	.61	.68	.66	.68	.55-.65	.74
½"	2	.15	.69	.48	.59	.70	.68	.60-.70	.74
¾"	1	.13	.35	.71	.82	.77	.64	.65-.75	.94
¾"	2	.25	.65	.57	.79	.78	.63	.70-.80	.91
¾"	7	.28	.38	.57	.77	.87	.72	.65-.75	.93

DESIGN DATA

UNITS	EDGE	PERFORATED	THICKNESS	CENTER-SCORED
12" x 12"				
Field Tile	Butt	Yes	½", ¾"	No
Border Tile	Butt	No	½", ¾"	No
12" x 24"				
Field Tile	T & G	Yes	½", ¾"	Yes
Border Tile	T & G	No	½", ¾"	Yes

Tile tested were painted with a full finish coat of paint.

Mounting No. 1—Cemented to plasterboard—Consider equivalent to cementing to plaster or concrete ceiling.

Mounting No. 2—Nailed to wood strips.

Mounting No. 7—Attached to metal supports on metal suspended system.

LIGHT REFLECTION—

PERFORATED AUDITONE—White, 75%

Tests by Official A.M.A. Laboratory.

HEAT CONDUCTIVITY: k=0.38

FIRE RESISTANCE:

1. "Combustible" when painted with standard USG Mill-Finish.
2. Meets Federal Specification SS-A-118b Class C "Slow Burning" classifiation when Mill-painted with USG Flame-Resistant Paint.

*T.M. Reg. U.S. Pat. Off.

AUDITONE
ACOUSTICAL TILE

RANDOM PERFORATED AUDITONE TILE

SOUND ABSORPTION COEFFICIENTS

SOURCE: Acoustical Materials Association

THICKNESS	MOUNTING	Coefficients at Cycles Shown						NRC Spec. Range	WEIGHT psf
		125	250	500	1000	2000	4000		
½"	1	.11	.26	.52	.58	.60	.66	.50-.60	.73
½"	2	.18	.60	.40	.47	.63	.77	.55-.65	.74
¾"	1	.22	.34	.71	.74	.77	.72	.60-.70	.92
¾"	2	.29	.67	.54	.68	.75	.65	.65-.75	.95

DESIGN DATA

UNITS	EDGE	PERFORATED	THICKNESS	CENTER-SCORED
12" x 12"				
Field Tile	Butt	Yes	½", ¾"	No
Border Tile	Butt	No	½", ¾"	No
12" x 24"				
Field Tile	T & G	Yes	½", ¾"	Yes
Border Tile	T & G	No	½", ¾"	Yes

Tile tested were painted with a full finish coat of paint.

Mounting No. 1—Cemented to plasterboard—Consider equivalent to cementing to plaster or concrete ceiling.

Mounting No. 2—Nailed to wood strips.

LIGHT REFLECTION—
RANDOM PERFORATED AUDITONE—White .77%

Tests by Official A.M.A. Laboratory.

HEAT CONDUCTIVITY: k=0.38

FIRE RESISTANCE:

1. "Combustible" when painted with standard USG Mill-Finish.
2. Meets Federal Specification SS-A-118b Class C "Slow Burning" classification when mill painted with USG Flame Resistant Paint.

INSTALLATION METHODS

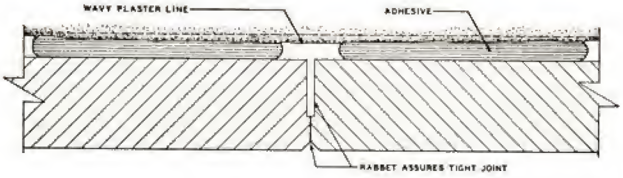
AUDITONE is installed by approved USG Acoustical Contractors using one of the following methods:

1. Adhesive application of 12" x 12" or 12" x 24" AUDITONE to an existing ceiling or to a suspended gypsum board base.
2. Stapling, nailing or screwing 12" x 24" tongue and groove units to wood strips, studs or joists.
3. Screw application of 12" x 24" tongue and groove units to USG Z-Board, SHEETROCK FIRECODE, or SHEETROCK wallboard.
4. Mechanical suspension of ¾" x 12" x 24" tongue and groove units.

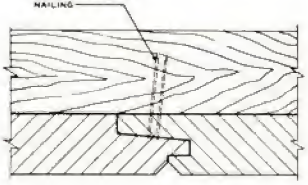
LIMITATION OF USE

SLOTTED, PERFORATED, and RANDOM PERFORATED AUDITONE should not be used below wainscot height or where tile will be subjected to severe impact, abrasion, or tampering.

AUDITONE tile is not recommended for use where it will be exposed to steam or constant high humidity.



Adhesive Application
12" X 12" AUDITONE



Stapling or Nailing Application
TO WOOD STRIPS USING 12" X 24"
T & G AUDITONE

DESCRIPTION

CORRUTONE Acoustical Panels are perforated, corrugated units accurately formed from heavily galvanized, bonderized steel, painted two coats of baked-on low gloss enamel. Light weight, highly sound absorbent mineral fiber pads are placed on the upper surface of each panel. These pads are incombustible, moisture and vermin resistant. The assembly has a pleasing appearance, can be economically installed, has a high sound absorption, and can be easily maintained.

Sizes—The CORRUTONE steel units are available in 24″ x 24″ or 24″ x 48″ sizes. Mineral fiber pads may be obtained in rolls or pads of 24″ x 24″ and 24″ x 48″ sizes.

FUNCTION AND UTILITY

Appearance—The CORRUTONE Acoustical Panels, suspended on the E-Z-S system, produce a truly refined surface of strong lines and simple beauty. The CORRUTONE units and the finish coated Z-Spline members create a very pleasant panel effect.

Economy—Because of the simplicity of the CORRUTONE system, the entire ceiling can be quickly and economically installed.

Inasmuch as the CORRUTONE Panels can be easily washed or repainted, annual maintenance costs are low.

Because of simplicity of design the CORRUTONE ceiling is almost 100% salvageable. It can be removed and installed in another area.

Sound Absorption—CORRUTONE has an unusually flat absorption curve and an exceptionally high sound absorption in the low frequencies, where most perforated tiles show poor absorption. (See Sound Absorption Data, Page 17.)

Maintenance—The smooth painted finish of the CORRUTONE Acoustical Panels resists soiling. If the panels do become dirty they can be easily washed or repainted by maintenance men.

Washability—Panels may be washed on the ceiling or can be removed, washed and replaced by maintenance men. An entire ceiling can be removed, "laundered" and replaced over-night without disturbing anyone within the area during working hours. Panels can be spot cleaned with a damp sponge.

Paintability—CORRUTONE can be repeatedly brush or spray painted following recommended paint procedures. If necessary, the panels can be removed, painted and replaced when dry.

Versatility—CORRUTONE Acoustical Panels afford easy accessibility to electrical wiring, plumbing, air conditioning and other services above the ceiling. The system accommodates almost any lighting arrangement, whether fluorescent or incandescent fixtures are used.

Fire Resistant—The entire CORRUTONE assembly, consisting of metal panels and mineral wool sound absorbing pads is rated "incombustible" under Federal Specifications SS-A-118b test method.

Thermal Conductivity—CORRUTONE Acoustical pad has a thermal conductivity factor of k-0.26.

LIMITATIONS OF USE

In areas of very high humidity, or where water might impinge against the acoustical surface, consult your USG representative.

Where CORRUTONE is used on large, high ceiling areas such as gymnasiums, two sheet metal screws should be used at each panel joint in addition to the use of hold down clips as recommended (see page 23 for specification).

SPECIAL USE

Ceilings are generally considered the most suitable surfaces for acoustical treatment. There are numerous cases, however, where supplemental side wall treatment is required and other cases where side wall treatment alone is more effective than ceiling treatment would be.

FUNCTION AND UTILITY

Because of the simplicity of the system and because the metal Corrutone panels are made of heavy galvanized, bonderized steel, painted with two coats of baked-on enamel that exactly matches the enamel finish of the Z-Splines and finish channel, the Corrutone units can be economically installed and easily maintained on side walls. The incombustible, highly sound absorbent mineral fiber pad provides high sound absorption at both the high and low frequencies.

*T.M. Reg. U.S. Pat. Off.

TECHNICAL · DATA

SOUND ABSORPTION COEFFICIENTS

SOURCE: Acoustical Materials Association

Thickness	Mounting	Coefficients at Cycles Shown						NRC Spec. Range	Weight
		125	250	500	1,000	2,000	4,000		
2″	7	.63	.79	.76	.82	.77	.54	.75-.85	0.10 Pad*

MOUNTING NO. 7—Attached to Metal Supports on Metal Suspended System.

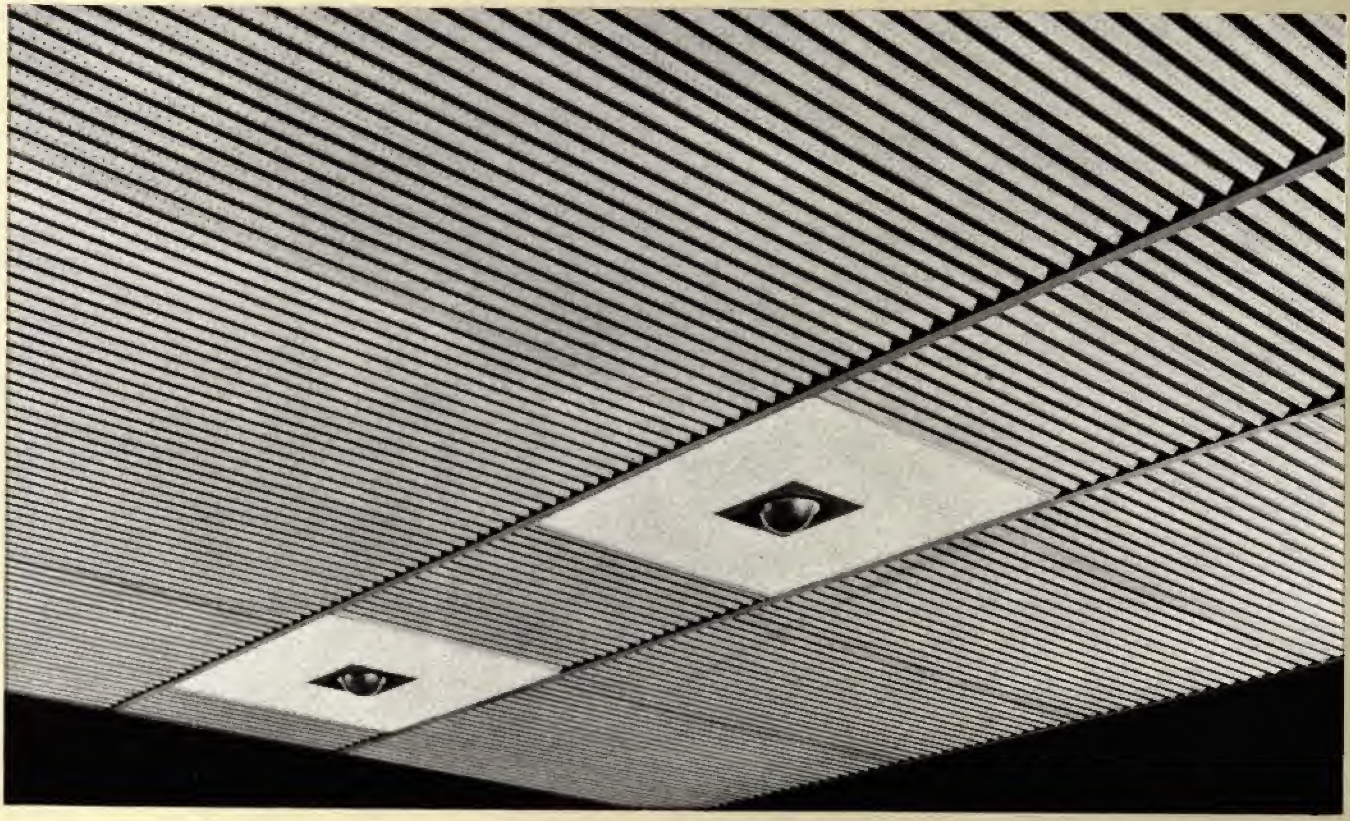
HEAT CONDUCTIVITY—k=0.26

*2″ Mineral fiber pads

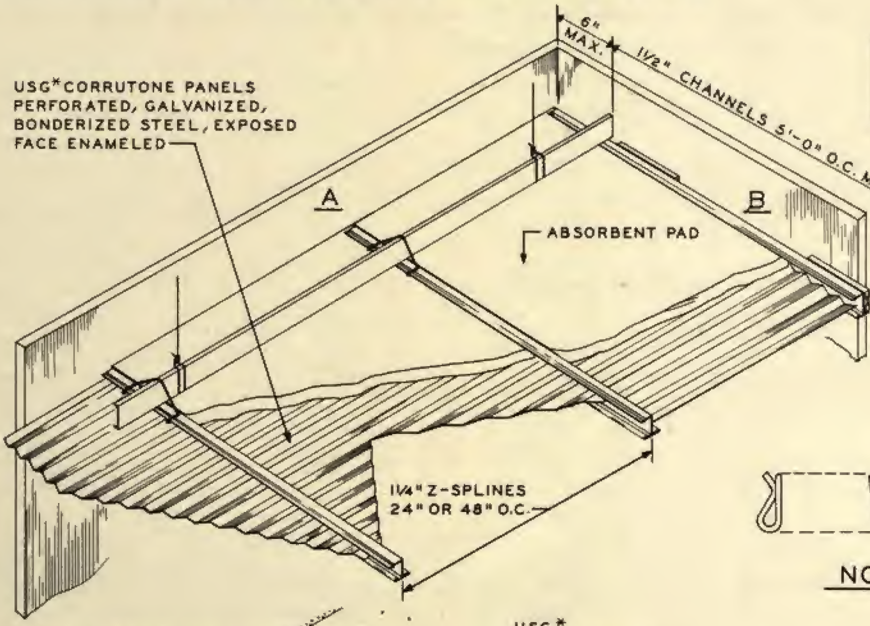
FIRE RESISTANCE—"Incombustible"

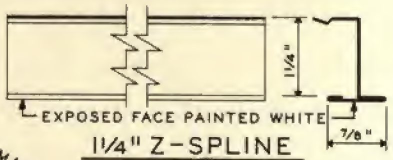
INSTALLATION

The CORRUTONE Panels are suspended on the E-Z-S system. This system can be attached to carrying channels, or directly to bar joist, or wood furring strips. CORRUTONE metal panels are supported on the bottom flanges of the Z-Spline, and a mineral fiber pad is placed on the upper surface of each panel. Panel ends are lapped. (See page 23 for specifications, page 18 for details.)

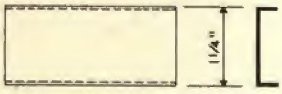


CORRUTONE ACOUSTICAL PANEL
MECHANICAL SUSPENSION ON E-Z-S SYSTEM

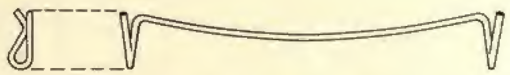

6" MAX.
1½" CHANNELS 5'-0" O.C. MAX.
USG* CORRUTONE PANELS PERFORATED, GALVANIZED, BONDERIZED STEEL, EXPOSED FACE ENAMELED
A
B
ABSORBENT PAD
1¼" Z-SPLINES 24" OR 48" O.C.



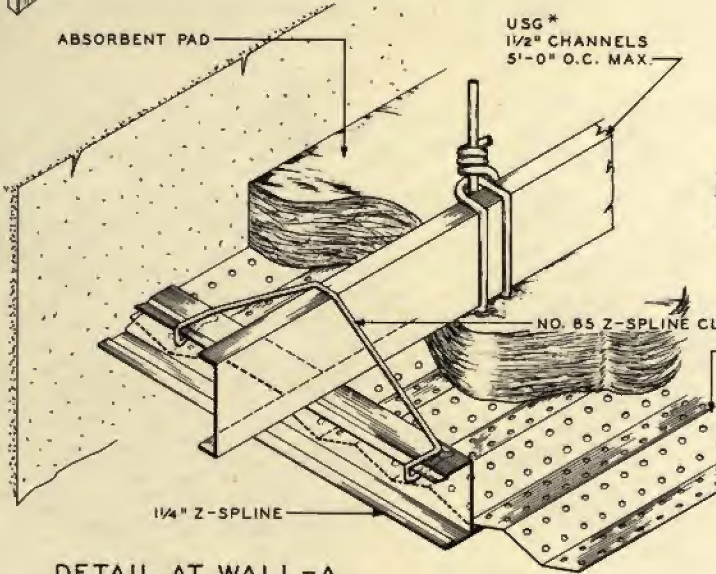
1¼" Z-SPLINE



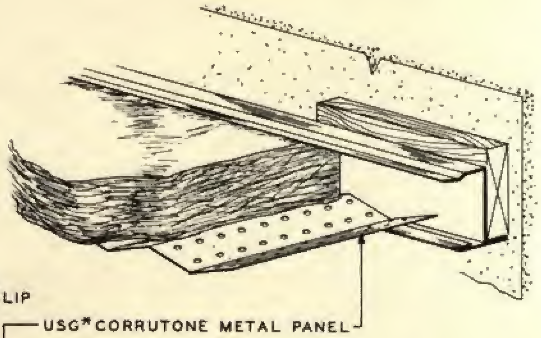
1¼" Z-SPLINE SPLICE



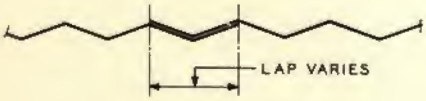
NO. 85 Z-SPLINE CLIP



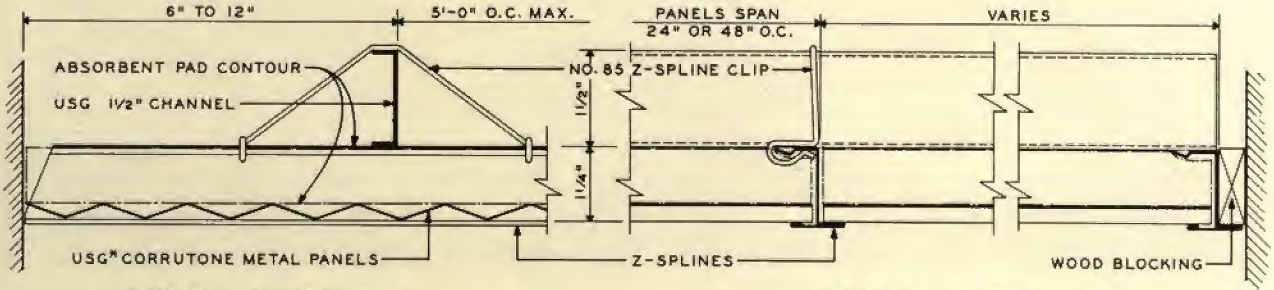
DETAIL AT WALL-A



DETAIL AT WALL-B



LAP DETAIL



DETAIL AT WALL-A

DETAIL AT WALL-B

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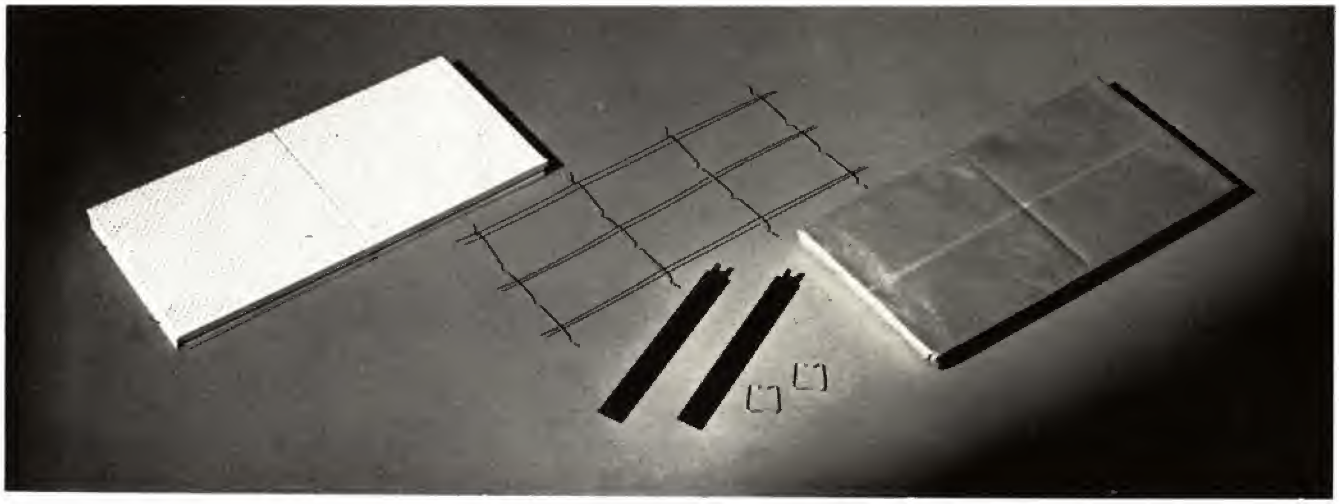
*T.M. Reg. U.S. Pat. Off.

PERFATONE*

ACOUSTICAL TILE UNITS



12" x 24" UNITS, CENTER-SCORED TO SIMULATE 12" x 12" UNITS; WIRE GRID SPACER TO SUPPORT MINERAL WOOL PAD; TEE RUNNERS; P-150 CLIPS

DESCRIPTION

PERFATONE acoustical units are perforated metal pans (1105 holes per square foot), 12" x 12" or 12" x 24", 12" x 36" in size, center-scored to simulate 12" x 12" units. Five types of PERFATONE pans are produced.

1. 26 ga. electro-zinc coated steel units with baked-on enamel on the face and back sides.
2. 26 ga. cold rolled steel units with baked-on enamel on the face and back sides.
3. 26 ga. electro-zinc coated steel units with baked-on enamel on the face side only.
4. 3S ½H .025 aluminum units with baked-on enamel on the face and back sides.
5. 3S ½H .025 aluminum units with the bare mill finish.

Enclosed within the metal units are mineral fiber sound-absorbent pads, supported on formed wire mesh which provides an air space between the pad and the metal facing.

The above PERFATONE units are also available unperforated for use as border tile or decorative effects.

FUNCTION AND UTILITY

Sound Absorption PERFATONE has a Noise Reduction Coefficient Spec. Range .90 to 1.00 and a Sound Absorption Coefficient of .99 at 500 cycles per second. (See Technical Data below).

Colors PERFATONE accoustical units are normally painted WHITE, but may be obtained in GRAY-GREEN or BLUE-GRAY colors.

Paintability and Maintenance PERFATONE can be repeatedly brush or spray painted following recommended paint procedures or may be washed with a damp sponge.

Fire Resistance PERFATONE metal units and the mineral wool pads are rated "Incombustible" when tested in accordance with Federal Specifications SS-A-118b.

LIMITATIONS OF USE

In areas of high humidity or where moisture might impinge against the acoustical surface, Aluminum PERFATONE Pans with galvanized fittings, or a different architectural design should be considered.

TECHNICAL DATA

SOURCE: Acoustical Materials Association

MOUNTING	THICKNESS	Coefficients at Cycles Shown						NRC Spec. Range	WEIGHT psf
		125	250	500	1000	2000	4000		
3	2½"	.32	.71	.99	.99	.82	.49	.90-1.00	1.11 pad

Pads were tested in perforated enameled metal pans with pad supports.

Mounting No. 3—Attached to metal supports applied to 1" x 3" wood furring.

LIGHT REFLECTION—White 78%

FIRE RESISTANCE—"INCOMBUSTIBLE" as Tested by Official A.M.A. Laboratory.

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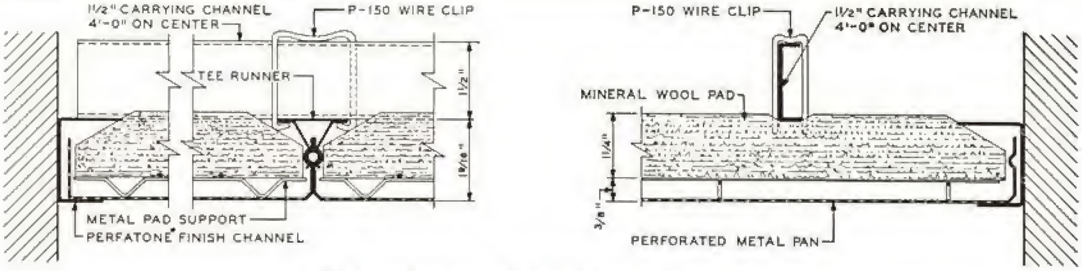
*T.M. Reg. U.S. Pat. Off.

PERFATONE INSTALLATION



Detail showing metal finishing channel at wall

PERFORATED ASBESTOS BOARD

DESCRIPTION

Perforated Asbestos Board—An "incombustible" acoustical construction consisting of perforated 3/16" asbestos board and mineral fiber pads or blankets. The perforated facing is attached with wood screws or by other means to furring strips. This construction is commonly used in space subject to high humidity, impact or abrasion, and in radio studios.

TECHNICAL DATA

SOURCE: Acoustical Materials Association

MOUNTING	THICKNESS	Coefficients at Cycles Shown						NRC Spec. Range	psf
		125	250	500	1000	2000	4000		
5	1 7/16"	.30	.63	.97	.91	.63	.33	.75-.85	1.21 pad

Pads were tested on Perforated Asbestos Boards.

Perforated Asbestos Board is not painted.

FIRE RESISTANCE—"INCOMBUSTIBLE" as Tested by Official A.M.A. Laboratory.

OTHER USG SOUND CONTROL MATERIALS

USG Sound Insulation—For insulating rooms against extraneous noises. This special USG construction employs patented resilient floor chairs and wall and ceiling resilient clips to support room surfaces, thus furnishing an effective barrier against sound transmission.

*T.M. Reg. U.S. Pat. Off.

DESIGN DATA

	Thickness	Size	Edge	Installation, Kerfing and Back-cut
MOTIF'D ACOUSTONE TILE ***Mineral Acoustical Tile***	¾"	12"x12"	Square Only	INSTALLATION: *Adhesive Method.* All units kerfed and back-cut for STANDARD KERF
	¾"	12"x12"	Square Only	INSTALLATION: *Mechanical Suspension— Concealed Z-Spline Method.* All units kerfed and back-cut for STANDARD KERF
	¾"	12"x24"	Square Only	INSTALLATION: *Mechanical Suspension— E-Z-S Suspension System.* Linea pattern only—All units kerfed and back-cut on 24" edges for Angles or T-Splines.
ACOUSTONE "F" ***Mineral Acoustical Tile***	¾"	12"x12"	Square or Bevel	INSTALLATION: *Adhesive Method.* All units kerfed and back-cut for STANDARD KERF
	¾"	12"x24" 12"x36"	Square Only	INSTALLATION: *Mechanical Suspension— E-Z-S Suspension System.* All units kerfed and back-cut on 24" or 36" edges for Angles or T-Splines.
	¾"	12"x24"	Square or Bevel	INSTALLATION: *Mechanical Suspension— Concealed Z-Spline Method.* All units kerfed and back-cut for STANDARD KERF
CORRUTONE ***Perforated, Corrugated Metal Acoustical Panels***	1 5/16" or 2 5/16"	24"x24" 24"x48"	Corrugated	INSTALLATION: *Mechanical Suspension— E-Z-S System.* *Side Wall Application—*
SLOTTED AUDITONE ***Wood Fiber Acoustical Tile***	¾"	12"x12"	Bevel	*ADHESIVE METHOD.*
	¾"	12"x24"	Tongue and Groove	1. Nailing or Stapling to Wood Framing. 2. Screw application to Wood Framing or USG Z-Board. 3. Mechanical Suspension.
PERFORATED AUDITONE ***Wood Fiber Acoustical Tile*** **and** **RANDOM PERFORATED AUDITONE** ***Wood Fiber Acoustical Tile***	½" or ¾"	12"x12"	Bevel	*ADHESIVE METHOD.*
	½"	12"x24"	Tongue and Groove	
	½" or ¾"	12"x24"	Tongue and Groove	1. Nailing or Stapling to Wood Framing. 2. Screw application to Wood Framing or USG Z-Board. 3. Mechanical Suspension.

SPECIFICATIONS

1. SCOPE

(Architect will list all areas to receive acoustical treatment.)

2. GENERAL PROVISIONS

2a. Bases to receive acoustical units and the units themselves shall not be installed unless satisfactory closures for windows and other openings are in place and roofs are tight. Temperatures in working areas shall be well above freezing.

2b. Bases to receive acoustical units adhesively applied shall be sound, dry and free of moisture.

2c. The area or room in which acoustical units are to be installed shall not be damp; i.e. plaster, terrazzo floor, etc., shall be previously installed and dry.

2d. Acoustical units shall not be adhesively installed to roof slabs during extremely hot weather.

3. MATERIALS

3a. Acoustical Tile Shall Be:

3a-1 MOTIF'D ACOUSTONE TILE (¾″ thickness 12″ x 12″ as manufactured by the U. S. Gypsum Company. MOTIF'D ACOUSTONE design shall be (No. 2, 5, 10, 19, 32, 33, 36, 37, 39 or 40) and shall be mill painted white or ivory, or Design No. 38 (¾″ x12″x24″).

3a-2 ACOUSTONE "F" (¾″ thickness x 12″ x 12″ or 12″ x 24″ or 12″ x 36″ square or bevel edge) as manufactured by the U. S. Gypsum Company. Tile shall be painted white or ivory.

3a-3 CORRUTONE (1$\frac{5}{16}$″ or 2$\frac{5}{16}$″ thickness 24″ x 24″ or 24″ x 48″) as manufactured by the U. S. Gypsum Company. CORRUTONE Acoustical Panels shall be metal units, perforated, corrugated, and mill painted white. Sound absorbent pads shall be mineral fiber pads 24″ x 24″ or 24″ x 48.

3a-4 SLOTTED AUDITONE TILES (¾″ thickness x 12″ x 12″ or 12″ x 24″) as manufactured by the U. S. Gypsum Company. (Specify Flame Resistant finish or standard mill finish.)

3a-5 PERFORATED AUDITONE (½″ or ¾″ x 12″ x 12″ bevel edge or 12″ x 24″ tongue and groove edge) manufactured by the U. S. Gypsum Company. (Specify Flame Resistant finish or standard mill finish.)

3a-6 RANDOM PERFORATED AUDITONE (½″ or ¾″ x 12″ x 12″ bevel edge or 12″ x 24″ tongue and groove edge) manufactured by the U. S. Gypsum Company. (Specify Flame Resistant finish or standard mill finish.)

3a-7 PERFATONE metal acoustical units as manufactured for the U. S. Gypsum Company. Metal units shall be 12″ x 12″ or 12″ x 24″, 12″ x 36″ center-scored to simulate 12″ x 12″ units. (Specify type of PERFATONE.

Sound absorbent mineral fiber pads shall be 12″ x 12″, or 12″ x 24″.

3a-8 PERFORATED ASBESTOS BOARD ($\frac{3}{16}$″ thickness x 12″ x 12″, 12″ x 24″, 24″ x 24″, 24″ x 48″) manufactured for the U. S. Gypsum Company, natural finish.

Sound absorbent mineral fiber pads shall be 12″ x 24″.

3b. Supended Gypsum Board Base Shall Be:

3b-1 a ½″ or ⅝″ gypsum board base conforming with Dry-Wall Manufacturers Assoc. specifications for adhesive application of acoustical tile.

4. ACCESSORIES FOR METHOD OF INSTALLATION AND INSTALLATION SHALL BE:

4a. ADHESIVE METHOD (12″ x 12″ MOTIF'D ACOUSTONE, 12″ x 12″ ACOUSTONE "F" or 12″ x 12″ AUDITONE ONLY)

4a-1 Accessories Shall Be:

4a-1a The adhesive shall be of a type manufactured expressly for the purpose shall not be water soluble nor contain ingredients that react chemically with paint, nor contain a solvent that has a stronger solvent action on an oil paint than naphtha; it shall contain no alcohol.

4a-1b Flat fiber splines. (Used with square edge MOTIF'D ACOUSTONE and ACOUSTONE "F", mineral acoustical tile, ONLY) shall be ¾″ x 3″ x .048″.

4a-2 Installation Shall Be:

The acoustical units shall be primed with adhesive prior to the application of the 4 spots of adhesive placed near the corners of the tile. The adhesive shall be approximately 2½″ in diameter after the tile has been pressed into position on the ceiling. Acoustical units shall be placed so that the face surface of the acoustical ceiling is aligned and level.

Place ¾″ x 3″ x .048″ Fiber Splines in the kerfs at the corners of the acoustical units.

4b. ADHESIVE METHOD (½″ x 12″ x 24″ Tongue and Groove AUDITONE ONLY).

4b-1 Accessories Shall Be:

4b-1a Same as 4a-1a.

4b-2 Installation Shall Be:

The acoustical units shall be primed with adhesive prior to the application of the 6 spots of adhesive; place 4 spots of adhesive near the corners of the 12″ x 24″ units and 2 spots near the edges of the tile at the centerline of the 24″ dimension. The adhesive shall be approximately 2½″ in diameter after the tile has been pressed into position on the ceiling. Acoustical units shall be placed so that the face surface of the acoustical ceiling is aligned and level.

4c. CONCEALED Z-SPLINE METHOD ¾″ x 12″ x 12″ MOTIF'D ACOUSTONE or ¾″ x 12″ x 24″ ACOUSTONE "F").

4c-1 Accessories Shall Be:

4c-1a 1½″ cold rolled carrying channels manufactured by the U. S. Gypsum Company.

4c-1b No. 8 ga. galvanized hanger wires.

4c-1c ¾″ Z-Spline manufactured by the U. S. Gypsum Company.

4c-1d No. 85 Clips manufactured by the U. S. Gypsum Company for attaching Z-Splines to bar joists or 1½″ or 2″ carrying channels. (No. 82-A Clip used to attach Z-Splines to 1½″ channel.)

4c-1e No. 90 Clips manufactured by the U. S. Gypsum Company for attaching Z-Splines to wood furring strips or wood framing.

4c-1f 26 ga. galvanized Flat Steel Splines manufactured by the U. S. Gypsum Company.

4c-1g ACOUSTONE, Finish Channel manufactured by the U. S. Gypsum Company.

4c-1h Finish Channel Corner Plate manufactured by the U. S. Gypsum Company.

4c-1j Spring Steel Spacers.

4c-2 Installation Shall Be:

4c-2a with 1½″ Carrying Channels. No. 8 ga. hanger wires shall be securely attached at 4′-0″ on center. 1½″ carrying channels shall be tied to the hanger wires. The 1½″ carrying channels shall be hung level and at a maximum spacing of 4′-0″ on center.

4c-2b with Wood Furring Strips. Wood furring strips of minimum 2″ x 3″ size shall be attached and leveled, at a maximum spacing of 4′-0″ on center.

4c-2c with Bar Joist Construction. If lower chords of the bar joists are not level, adequate shims shall be used between the lower chord of the bar joists and the Z-Splines, when the Z-Splines are attached to the bar joists.

INSTALLATION

¾″ Z-Splines shall be attached on 12″ centers and at right angles to the (metal grillage by 82-A Clip) (bar joists by 85 Clip) (wood framing by No. 90 Clip). ¾″ thick 12″ x 24″ ACOUSTONE "F" (¾″ x 12″ x 12″ MOTIF'D ACOUSTONE) shall be supported by inserting the Z-Spline flanges into kerfed edges of the tile. Abutting edges shall be aligned by inserting Flat Steel Splines into the kerfs of the transverse edges of the tile.

ACOUSTONE Finish Channel mouldings shall be provided at the wall surfaces and Spring Steel Spacers placed in the Channel at 12″ centers. A Finish Channel Corner Plate shall be used at all exterior corners. Interior corners where Finish Channel is to continue, flanges shall be cut and the web bent to form corners, overlapping channel flanges.

4d. E-Z-S SUSPENSION SYSTEM (¾″ thick x 12″ x 24″ ACOUSTONE "F").

4d-1 Accessories Shall Be:

4d-1a 1½″ cold rolled carrying channels manufactured by the U. S. Gypsum Company.

4d-1b No. 8 ga. galvanized hanger wires.

4d-1c 1¼″ Painted Z-Splines manufactured by the U. S. Gypsum Company.

4d-1d No. 85 Clips manufactured by the U. S. Gypsum Company for attaching Z-Splines to bar joists or 1½" or 2" carrying channels. (82-A Clip used to attach Z-Spline to 1½" channels).

4d-1e No. 90 Clips manufactured by the U. S. Gypsum Company for attaching Z-Splines to wood furring strips or wood framing.

4d-1f Electro-galvanized 24-ga. Angle Splines manufactured for the U. S. Gypsum Company.

4d-1g Electro-galvanized 26-ga. T-Splines manufactured for the U. S. Gypsum Company.

4d-2 Installation Shall Be:

4d-2a with 1½" Carrying Channels. No. 8 ga. hanger wires shall be securely attached at a maximum of 5'-0" on centers. 1½" carrying channels shall be tied to the hanger wires. The 1½" carrying channels shall be hung level and at a spacing of a maximum 5'-0" on centers.

4d-2b with Wood Furring Strips. Wood furring strips of minimum 2" x 3" size shall be attached and leveled at a maximum spacing of 5'-0" on centers.

4d-2c with Bar Joist Construction. If the lower chords of the bar joists are not level, adequate shims shall be used between the lower chord of the bar joists and Z-Splines when the Z-Splines are attached to the bar joists.

INSTALLATION

1¼" Painted Z-Splines shall be attached on 24" centers and at right angles to the (Metal grillage by No. 82 Clip) (bar joists by No. 85 Clips) (wood furring or wood framing by No. 90 Clips). ¾" x 12" x 24" ACOUSTONE "F" mineral acoustical tile shall be placed on top of the lower flanges of the Z-Spline; Angle Splines or T-Splines shall be inserted in the kerfs of the abutting or transverse edges of the ACOUSTONE "F".

4e. GYPSUM BOARD—NAILING CHANNEL SYSTEM

4e-1 Accessories Shall Be:

4e-1a 1½" cold rolled carrying channels manufactured by the U.S. Gypsum Company.

4e-1b No. 8 ga. galvanized hanger wires.

4e-1c Nailing Channel and Splice Plates manufactured by the U.S. Gypsum Company.

4e-1d USG Z-Board—½" x 2' x 8' USG Z-Board with tongue and groove edges, core treated to resist penetration of moisture.

4e-1e ½" x 4' x 8', 9', 10', 12' or 14' SHEETROCK FIRECODE wallboard.

4e-1f ½" or ⅝" x2'x8' BAXBOARD backing board or ⅝" x2' or 4'x8' BAXBOARD FIRECODE backing board with "V" edges.

4e-1g No. 12 Ga. Galvanized Tie Wire—used to wire tie Nailing Channels to 1½" channels, bar joists or other framing members.

4e-1h Butt Joint Clip or Butt Joint Washer—used at all gypsum board joints. For fire rated constructions double-up nailing channels at end joints.

4e-1i Nails shall be 12½ to 11 gauge with ring shank (16 to 20 rings per inch), medium to short diamond point, ¼" to 5/16" head. Nails shall be 1⅛" long for ⅜" board and 1¼" for ½" and ⅝" board.

4e-2 Installation Shall Be:

4e-2a with 1½" Carrying Channels. No. 8 ga. hanger wires shall be securely attached at a maximum of 4'-0" on centers. 1½" carrying channels shall be tied to the hanger wires. The 1½" carrying channels shall be hung level and at a spacing of a maximum 4'-0" on centers.

INSTALLATION

Nailing Channels shall be securely wire tied to 1½" carrying channels with #12 Ga. galvanized tie wire.

Maximum Channel spacing for ½"-BAXBORD shall be 16" center to center and 24" on center for other ½" and ⅝" boards shown above provided the gypsum boards have "V" edges or the joints are taped, otherwise the maximum spacing for ½" and ⅝" board shall be 20" center to center.

Nail Spacing shall be 6" center to center in all cases except where fire rated construction details specify otherwise. End joints are to be staggered at least one support spacing. Butt joints are to occur under nailing channel where butt joint clips or washers must be used 6" on center.

4f. CORRUTONE SUSPENSION SYSTEM (1 5/16" or 2 5/16" thick x 24" x 24" or 24" x 48" CORRUTONE Metal Acoustical Panel)

4f-1 Accessories Shall Be:

4f-1a 1½" cold rolled carrying channels manufactured by the U. S. Gypsum Company.

4f-1b No. 8 ga. galvanized hanger wires.

4f-1c 1¼" Painted Z-Splines manufactured by the U.S. Gypsum Company.

4f-1c 1¼" Painted Z-Splines manufactured by the U.S. Gypsum Company.

4f-1d No. 85 Clips manufactured by the U. S. Gypsum Company for attaching Z-Splines to bar joists or 1½" or 2" carrying channels. (82-A Clip used to attach Z-Spline to 1½" channels.)

4f-1e No. 90 Clips manufactured by the U. S. Gypsum Company for attaching Z-Splines to wood furring strips or wood framing.

4f-2 Installation Shall Be:

4f-2a with 1½" Carrying Channels. No. 8 ga. hanger wires shall be securely attached at a maximum spacing of 5'-0" on centers. 1½" carrying channels shall be tied to the hanger wires. The 1½" carrying channels shall be hung level and at a maximum spacing of 5'-0" on centers.

4f-2b with Wood Furring Strips. Wood furring strips of minimum 2" x 3" size shall be attached and leveled at a maximum spacing of 5'-0" on centers.

4f-2c with Bar Joist Construction. If the lower chords of the bar joists are not level, adequate shims shall be used between the lower chord of the bar joists and Z-Splines when the Z-Splines are attached to the bar joists.

INSTALLATION

1¼" Painted Z-Splines shall be attached on 24" or 48" centers and at right angles to the (Metal grillage by No. 82-A Clip) (Bar joists by No. 85 Clips) (wood furring or wood framing by No. 90 Clips). 2 5/16" thick x 24" x 24" or 24" x 48" CORRUTONE Metal Acoustical Panels shall be placed on top of the lower flanges of the Z-Splines. A mineral fiber pad shall be placed on the upper surface of all CORRUTONE Panels.

4g. STAPLING METHOD (SLOTTED AUDITONE: Use ¾" thick 12" x 24" tongue and groove units. PERFORATED AUDITONE: Use ½" or ¾" thick 12" x 24" tongue and groove units. RANDOM PERFORATED AUDITONE: Use ½" or ¾" thick 12" x 24" tongue and groove units.)

4g-1 Accessories Shall Be:

4g-1a 1" x 3" minimum size wood furring strips (when necessary).

4g-1b Staples shall be 9/16" long, coated.

4g-2 Installation Shall Be:

Wood furring strips shall be installed and leveled (12" on center with ½" thick AUDITONE) (12" or 16" on center with ¾" thick AUDITONE for the square pattern), (12" on center for the diagonal pattern). The acoustical units shall be attached by stapling the advancing tongue edge of the AUDITONE to the wood furring strips or wood framing.

4h. NAILING METHOD (SLOTTED AUDITONE: Use ¾" thick 12" x 24" tongue and groove units. PERFORATED AUDITONE: Use ½" or ¾" thick 12" x 24" tongue and groove units. RANDOM PERFORATED AUDITONE: Use ½" or ¾" thick 12" x 24" tongue and groove units.

4h-1 Accessories Shall Be:

4h-1a 1" x 3" minimum size wood furring strips (when necessary).

4h-1b Nail shall be:

For ½" AUDITONE—Use 1⅛" blued lath nails.
For ¾" AUDITONE—Use 1¼" blued lath nails.

4h-2 Installation Shall Be:

Wood furring strips or wood framing shall be installed and leveled (12" on center with ½" thick AUDITONE), (12" or 16" on center with ¾" thick AUDITONE for the square pattern), (12" on center for the diagonal pattern). The acoustical units shall be installed by nailing the advancing tongue edge of the AUDITONE, wood fiber acoustical tile, to the wood furring strips or wood framing.

4i. SCREW APPLICATION (SLOTTED AUDITONE: Use ¾" thick 12" x 24" tongue and groove units. PERFORATED AUDITONE: Use ½" or ¾" thick 12" x 24" tongue and groove units. RANDOM PERFORATED AUDITONE: Use ½" or ¾" thick 12" x 24" tongue and groove units.) Screwed to wood furring strips, wood framing, or gypsum boards.

4i-1 Accessories Shall Be:

4h-1a 1" x 3" (minimum size) wood furring strips.
4h-1b ½" USG Z-Board nailed to wood framing.
4h-1c ½" SHEETROCK FIRECODE wallboard nailed to wood framing.
4h-1d BAXBOARD FIRECODE wallboard nailed to wood framing.

4i-2 Installation Shall Be:

4h-2a Wood furring strips or wood framing shall be installed and leveled (12" on center with ½" thick AUDITONE), (12" or 16" on center with ¾" thick AUDITONE for square pattern), (12" on center for the diagonal pattern).
4i-2b Specified Gypsum Board shall be nailed to wood framing.
4i-2c The acoustical units shall be installed by screwing the advancing tongue edge of the AUDITONE tile to the wood framing, or specified gypsum board.

Only three screws per tile (12" x 24" Tongue and Groove AUDITONE) are required to mechanically attach the tile to the specified gypsum board. Use a ⅞" long No. 4 flat head screw for ½" AUDITONE, a 1" long No. 4 flat head screw for ¾" AUDITONE. Space wood furring strips or channels not to exceed 24" on center.

4j. SCREW APPLICATION (3/16" thick x 12" x 12", 12" x 24" or 24" x 48" Perforated Asbestos Board ONLY).

4j-1 Accessories Shall Be:

4j-1a 1" x 3" (minimum size) wood furring strips (when necessary).
4j-1b 1¼" x 12" x 24" mineral wool pad wrapped in flameproofed membrane.
4j-1c Screws shall be No. 6 flat head screws not less than ¾" long.

4j-2 Installation Shall Be:

Perforated Asbestos Board shall be securely attached to wood furring strips spaced 12" on center by fastening screws into the wood furring strips and through the holes of the Perforated Asbestos Board. The mineral fiber pad shall be placed between the wood furring strips and on top of the Perforated Asbestos Board.

RELATED INCLUSIONS

AUDITONE may be economically stapled, nailed or screwed to wood supports spaced not to exceed 12" on center for either the square or diagonal pattern.

Size of nailing strips	Maximum spacing of supports
1"x2" or 1"x3"	24"
2"x2" or 2"x3"	36"

Where a suspended ceiling is required, a double grillage is recommended, using as main members (2" x 2") or (2" x 3"), nailing strips spaced as shown above.

Steel Channels not less than 1½" deep spaced up to 48" on centers may be used in lieu of the main wood members. The wood nailing strips may be wired to these channels.

Nailing strips (2" x 2") or (2" x 3") will successfully span 48" if a 1" x 2" stiffener strip is nailed to them midway between and parallel to the 48" supports.

Nailing strips may be spaced 16" on center for square pattern and 12" on center for diagonal pattern.

4k. PERFATONE MECHANICALLY SUSPENDED.

4k-1 Accessories Shall Be:

4k-1a 1½" cold rolled carrying channels manufactured by the U. S. Gypsum Company.
4k-1b No. 8 ga. galvanized hanger wires.
4k-1c Tee Runners manufactured for the U. S. Gypsum Company.
4k-1d P-150 Wire Clips manufactured by the U. S. Gypsum Company for attaching the Tee Runners to the 1½" carrying channels.
4k-1e PERFATONE Finish Channel manufactured by the U. S. Gypsum Company.

4k-2 Installation Shall Be:

4k-2a with 1½" Carrying Channels. No. 8 ga. hanger wires shall be securely attached at 4'-0" on centers. 1½" carrying channels shall be tied to the hanger wires. The 1½" carrying channels shall be hung level and at a maximum spacing of 4'-0" on centers.

INSTALLATION

Tee Runners shall be attached 2'-0" on centers by P-150 Clips to the 1½" carrying channels. PERFATONE, acoustical units, with the mineral fiber pad and pad support included, shall be securely snapped into the Tee Runners. PERFATONE Finish Channel moulding shall be prepared at the wall surfaces.

"ACOUSTONE", "AUDITONE", "MOTIF'D", "USG", "ROCKLATH", "SHEETROCK", "FIRECODE", "BAXBORD", "PERFATONE" mentioned in this publication are Reg. U.S. Pat. Off., "CORRUTONE" is a trademark owned by United States Gypsum and used by it to distinguish its products. "ACOUSTONE" as used herein identifies the particular mineral acoustical tile; "CORRUTONE" as used herein identifies the particular perforated, corrugated metal acoustical panel; "AUDITONE" as used herein identifies the particular wood fiber acoustical tile; "MOTIF'D" as used herein identifies the particular mineral acoustical tile with decorated surface; "USG" as used herein identifies the particular sheathing and sound insulation; "SHEETROCK" and "FIRECODE" as used herein identify the particular gypsum wallboard; "BAXBORD" as used herein identifies the particular backing board; "ROCKLATH" as used herein identifies the particular gypsum lath or plaster base; "PERFATONE" as used herein identifies the particular perforated metal acoustical tile; all manufactured only by United States Gypsum.